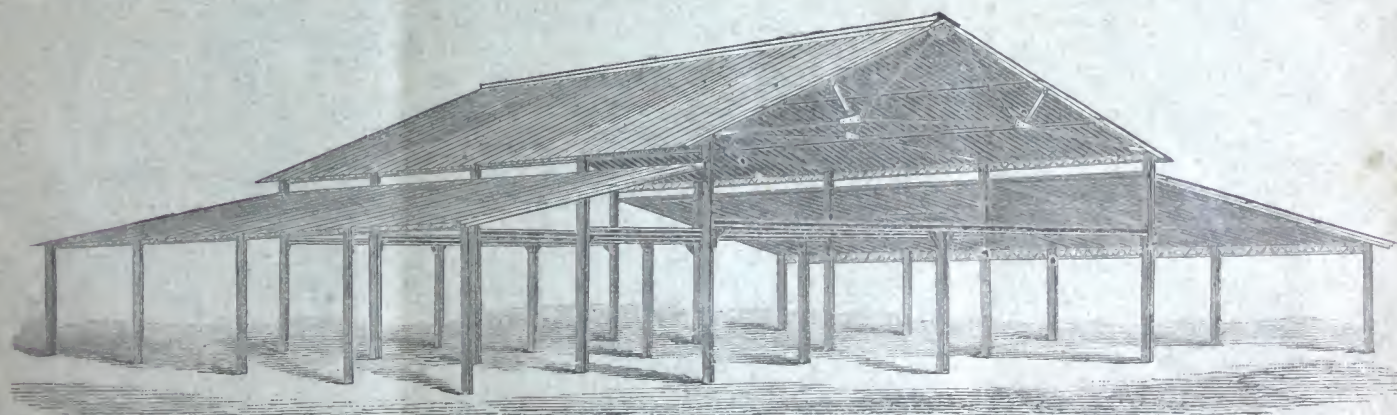


ILLUSTRATED CATALOGUE
OF
GALVANIZED IRON ROOFING AND SHEDDING,
IRON STRUCTURES, &c.,
PATENT PORTABLE STEEL RAILWAYS,
RAILWAY PLANT,
IRON BRIDGES, &c.



Design No. 457—see page 24.

A. & J. MAIN & CO.,
ENGINEERS AND CONTRACTORS,
IRON ROOFING AND BRIDGE MANUFACTURERS,
HEAD OFFICES AND WORKS:
CLYDESDALE IRON WORKS, POSSILPARK, GLASGOW.
BRANCHES:
108 QUEEN VICTORIA STREET, LONDON, E.C.;
11 LEINSTER STREET, DUBLIN;
AND
CORN EXCHANGE BUILDINGS, EDINBURGH.

INTIMATION.

A. & J. MAIN & Co. have pleasure in submitting their New Catalogue of Galvanized Iron Roofing and Structures. It will be found to include a considerable variety of new arrangements, especially with regard to Foreign requirements, selected, in most instances, from contracts actually executed during the past year. These are given merely as specimens of the varied descriptions of work of this class which are required from time to time; and it will be understood that A. & J. MAIN & Co. are always prepared to tender for any description of similar work on receipt of the necessary information as to details.

In regard to Iron Roofing for Agricultural purposes, several new arrangements are also submitted; and reference can be made to work of this kind already erected in all parts of the United Kingdom.

A. & J. MAIN & Co. desire to call attention to the economical advantages which purchasers in nearly every part of the Kingdom may obtain by procuring goods from Glasgow. Situated as it is, in the centre of an extensive Coal and Iron district, and being inhabited by a large industrial population, it is able to produce every description of manufactured Iron at prices which can scarcely be equalled elsewhere; while its advantages as a seaport, having direct communication with every port of any consequence throughout the country, secure for the purchaser the benefit of much lower rates of carriage than is possible where heavy inland rates require to be paid.


ORDERS FROM ABROAD, except when forwarded through A. & J. MAIN & Co.'s Agents, should, in all cases, be accompanied by a remittance, or a reference to a House of established standing in this country.

CLYDESDALE IRON WORKS, POSSILPARK,
GLASGOW, January, 1884.

DIRECTIONS FOR TRANSMITTING MEASUREMENTS.

In all cases it is necessary, in inquiries for Iron Roofing, to specify—

- 1st. The *length*, and if upon Timber Uprights, Iron Columns, or Walls. If upon Walls, state the *thickness* of the Walls, and whether the length is inside or over the Walls.
 - 2nd. The *width* in a similar manner.
 - 3rd. The *height* to Eaves.
 - 4th. If the Roof is upon Walls, state if the End Walls are to be *built up* to the curve or pitch of Roof, or if *iron end cleading* is to be supplied.
 - 5th. If upon Iron or Timber Uprights, state if sides are to be closed in with Sheets; and if so, if Doors and Windows are desired, with the size and position of the Doors.
 - 6th. State if Ventilators and Lights are required in the Roof.
 - 7th. Refer to the design in this Catalogue which most nearly conveys the arrangement preferred, and generally give full particulars of the Roof or Building desired.
-

 **PLANS**, with full **SPECIFICATIONS** and **PRICES**, will be forwarded as quickly as possible after receipt of the necessary information. But as Prices in general cannot be quoted without the preparation of Plans and their careful measurement, time must be allowed for these necessary preliminaries. In all cases, however, the most prompt attention which circumstances permit will be given to all inquiries.

A. & J. MAIN & CO.'S

GALVANIZED

IRON ROOFING AND IRON STRUCTURES.

IRON ROOFING and IRON STRUCTURES are now matters of great interest to all parties at Home and Abroad connected with Agriculture and Commerce. Buildings of all kinds, permanent and merely temporary, are now constructed of Iron, and it is thus of manifest importance that the different kinds of Roofing, and especially the correct principles to be adopted in them, should be fully understood. With the view of explaining various points in regard to the best methods of construction, A. & J. MAIN & CO. have prepared a series of Sectional Illustrations of parts and details, which they now submit as the best means of giving accurate information to intending purchasers of such structures.

"Safe Structures."—While the almost infinite variety of uses to which Iron Roofing and Iron Structures can be advantageously applied is, in general, well known, much yet requires to be understood as to what forms a "SAFE STRUCTURE." In an Iron Roof or Building "safety" means permanence. With "safety" secured, there is little difficulty in estimating how long the structure will last, and its consequent advantage as an investment. Without "safety," permanence and economy become impossible.

"Rule of Safety."—It is not enough that an Iron Roof, for example, should merely carry its own dead weight. It is not even enough that it should have strength to carry its load of snow or wind-pressure; but over and above, it should have a "margin of safety" equal to the strain of its dead weight and wind-pressure together, *multiplied by four*, before it can be considered a safe structure.

This Rule of Safety may be said to be the strength generally adopted by Professional Engineers in their specifications for Iron Roofs and Structures, and experience has shewn it to be the only reliable guide; but it is to be regretted that many manufacturers, for the purpose of offering temptingly cheap quotations, have transgressed this rule to the serious loss and disappointment of purchasers.

While A. & J. MAIN & CO. fully recognise the necessity for economy and the advantage of moderate prices, they never allow cheapness to affect the question of "safety;" and with the view of satisfying purchasers that this essential element receives full consideration at their hands, while at the same time endeavouring to adapt their Buildings to the special requirements of each case, they offer the following detailed information of the arrangements which they adopt to secure "safety" in their Iron Roofing and other structures.

Manufacturing Facilities.—In their Workshops A. & J. MAIN & CO. have a separate Department for their Iron Roofing, Iron Bridge, and Railway work, fitted with all the most recent and best appliances for the manufacture of such work with accuracy and economy. From being situated also in the centre of the Scotch Iron district, with facilities for shipment to all parts of the world without Inland Carriages, Purchasers at Home and Abroad may rely that Contracts entrusted to them will be executed at the lowest possible prices which a due regard to efficiency and strength permit.

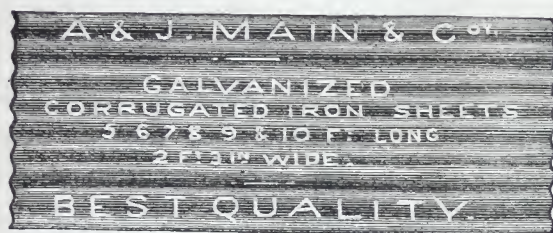
IRON ROOFING.

THERE are two classes of Iron Roofs, distinct in their arrangements, termed "Self-Supporting" and "Trussed;" and the leading features of each are dealt with separately.

SELF-SUPPORTING IRON ROOFS.

So called from Iron Principals not being used in their construction, and from the Sheets being the chief element of strength in the Roof—are made only in a curved or semi-circular form. The construction of this class of Roofing is extremely simple, and for spans of a moderate width is the most economical in price; yet, from its very simplicity, special care and attention require to be given to all "details." It should always be remembered that with *one weak point* in a Roof, the whole fabric may prove unequal to resist the strain of a severe wind-pressure; and therefore the most minute details are elements of essential importance.

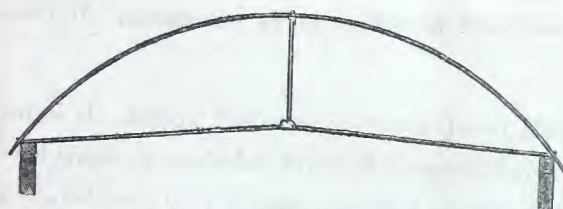
General Features.—Keeping in view the fact that the Sheets in a Self-Supporting Roof are the chief element of strength, it will at once be seen that the "Rule of Safety" applied to this form of structure, requires that the Sheets should be increased in thickness or gauge as the span increases in width; that quality of material is of essential importance; that the Tie-Bars and other small amount of framing necessary should be arranged to give sufficient support to the Sheets; and that all DETAIL FIXINGS should be such as to give to every point its due proportion of strength, according to the pressure that comes upon it.



stated, be *graduated in thickness*, according to the width of the building to be covered. After Corrugation and allowance for overlapping, the Sheets cover 24 in. and 30 in. in breadth respectively; but the most usual width is 24 in.

Tie-Bars.—In a Self-Supporting Roof, although the Sheets are the chief consideration, it is yet necessary to have Tie-Bars or other efficient bracing to support the Sheets; and these must be increased in strength, and varied in arrangement, according to the span of the Roof.

Purlin-Bars are usually formed of Angle-Iron and run longitudinally the whole length of the Roof; and they must be increased in *number* in proportion to the span of the Roof.



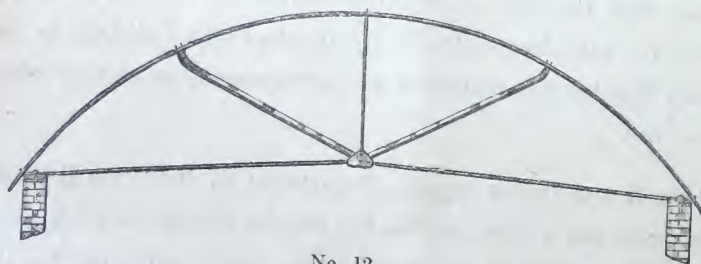
No. 10.

Spans up to 20 Feet.—In general terms it may be stated that the "Rule of Safety," applied to Self-Supporting Roofs, does not permit the adoption of Sheets less than No. 22 W. G. for Spans up to 20 feet in width, with one Angle-Iron Purlin-Bar, and with Tie-Bar having King-Post (or Centre Upright) to each, at not more than 15 feet apart,—see *Diagram, No. 10.*



No. 11.

Spans up to 24 Feet.—For Spans up to 24 feet the same Gauge of Sheets will suffice; but there should be *two* Angle-Iron Purlin-Bars; and the Tie-Bars should be fitted with "Queen-Posts," (or Two Uprights,)—see *Diagram, No. 11.* At 25 feet Span it is necessary to increase the Sheets to No. 20 W. G.



No. 12.

Spans up to 28 Feet.—For Roofs up to 28 feet Span, the Sheets should be No. 20 W. G.; and when 28 feet span is reached *three* Angle-Iron Purlin-Bars should be used, and the Tie-Bars fitted with Upright and two Struts,—see *Diagram, No. 12.* At 30 feet Span the Sheets should not be less than No. 18 W. G.; but at this point a light TRUSSED CURVED ROOF, with Sheets No. 22 W. G., costs about the same; and a Trussed Roof being in many respects preferable, A. & J. MAIN & CO. recommend its adoption for all Spans of 30 feet and upwards.

Omission of Purlin-Bars.—The Angle Iron Purlin-Bars referred to are frequently *omitted* in this class of Roofing, but a greater mistake could not be made. The Purlin-Bars add most materially to the strength and uniformity of the Roof, and should never be dispensed with.

Securing Sheets.—The next important point is to see that the Sheets are properly secured at the Eaves and to the Purlin-Bars. It should always be kept in mind that the strength of an Iron Roof is equal only to the strength of its weakest point; and thus while the Sheets and Framing may respectively be sufficient, yet, if not properly secured to each other, the Structure as a whole, in a gale of wind, might not prove equal to the strain.

If a Self-supporting Roof is erected upon Walls, there must be a Timber Wall-Plate along the Eaves, with the outside edges "chamfered," and secured to the Walls by Anchor Bolts—(see Diagram No. 13)—or by some other equally effective means. If upon Timber Uprights, there must be Timber Eaves Beams similarly chamfered, and firmly secured to the Uprights. If upon Iron Columns, either Timber or Iron Eaves Beams must be used. With Timber Eaves Beams and Wall-Plates the Sheets are secured to them with Screws or Nails at from 6 in. to 12 in. apart. When Iron Eaves Beams are used, the Sheets are secured to them by A. & J. MAIN & Co.'s Iron Clips or Brackets, as explained below.

The ordinary method adopted for securing the Sheets to the Purlin-Bars is by what are termed "Hook-Bolts;" but these, in practice, have been proved to be unreliable in a high-wind pressure.

The plan adopted by A. & J. MAIN & Co. is extremely simple and effectual. (See annexed Diagram No. 14.) By this arrangement the Angle Iron Purlin-Bar A is clasped by the Wrought Iron Bracket or Clip B, which again is bound to the Sheets C by two Bolts and Nuts passing through the Sheets and through strong Corrugated Washers D outside; and in this way the connection between the Sheets and the Iron Framing is complete, while the arrangement itself possesses perfect simplicity.

When Iron Eaves Beams are adopted, the Sheets are secured to them by a modification of these Clips, imparting perfect security at a point where strength is of the greatest importance.

End Cleading.—In Self-supporting Roofs, when the ends are not closed in with Walls built up to the curve of Roof, there should always be an Iron Principal at each end, to which the Sheets should be firmly attached; and it is further of advantage to close in the ends to the level of the Eaves with Galvanized Sheets. When the ends are closed in with Sheetting, strong Angle Iron Framing is supplied to which the Sheets are bolted.

If these arrangements and details are followed, SELF-SUPPORTING IRON ROOFS will be found a valuable and economical form for a great variety of Agricultural and other purposes where the Spans do not exceed the width to which they are applicable. The system detailed is adopted by A. & J. MAIN & Co. in all their Roofing of this class, and the experience of many years, and the satisfactory testimonials and recommendations they have from time to time received, prove their Structures to be appreciated by purchasers; and as by their system a superior value is given to A. & J. MAIN & Co.'s Iron Roofing, its many and solid advantages should be carefully kept in view in comparing their prices with others professedly similar.

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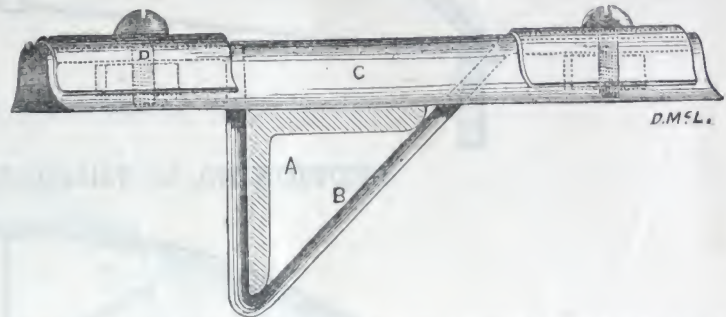
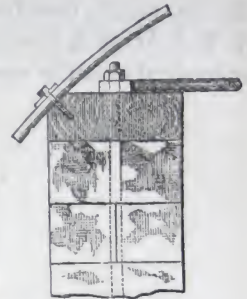
PLANS, with full **SPECIFICATIONS** and **PRICES**, will be forwarded as quickly as possible after receipt of the necessary information. But as Prices in general cannot be quoted without the preparation of Plans and their careful measurement, time must be allowed for these necessary preliminaries. In all cases, however, the most prompt attention which circumstances permit will be given to all enquiries.

ERECTION OF IRON ROOFING.

A. & J. MAIN & Co. have a staff of thoroughly experienced workmen for the Erection of Iron Roofing, Shedding, and Iron Structures; and they are prepared to Contract for the completion of all such work in any part of Great Britain or Ireland.

In cases Abroad, where the expense of sending workmen specially for that purpose would be too great, the various parts are all carefully marked and numbered for re-erection, and working plans are furnished. The erection is, indeed, a very simple matter, as the different parts are easily handled, and have only to be bolted together, which can readily be done by any intelligent workman. This facility of erection renders A. & J. MAIN & Co.'s Iron Roofing and Shedding specially adapted for all Foreign or Colonial requirements.

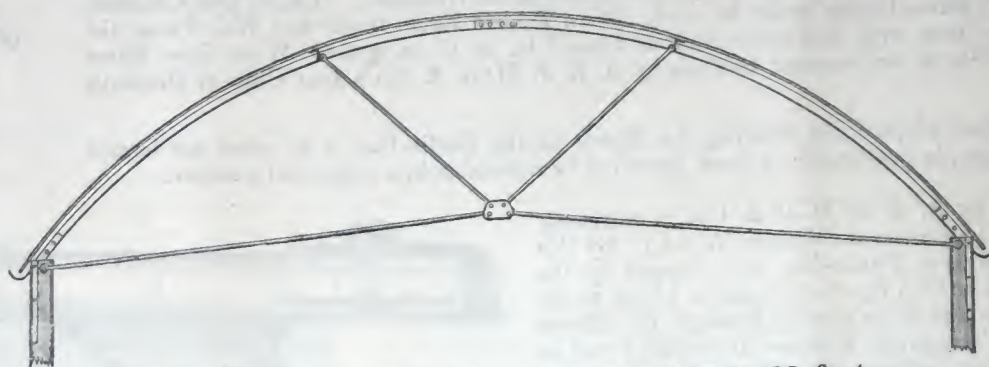
No. 13.



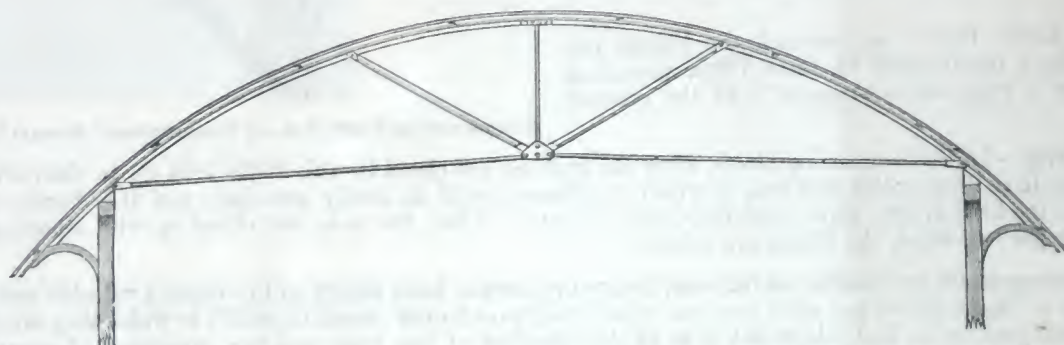
SECTION SHewing CROWN BAR AND WROUGHT-IRON "BRACKET" OR "CLIP."—No. 14.

TRUSSED IRON ROOFING, CURVED SECTIONS.

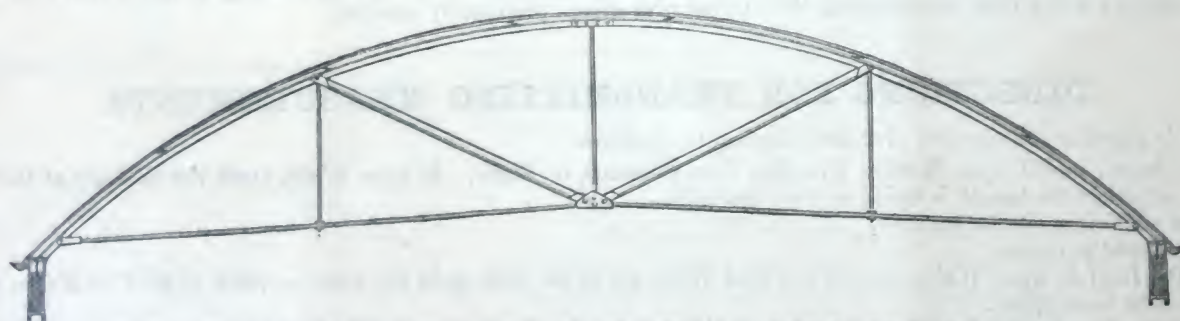
As Trussed Roofing is made to embrace very wide spans, it is manifest that the designs or "sections" applicable to them will be very numerous, and would form a subject much too elaborate to be dealt with exhaustively within the scope of these pages. As the best means, therefore, of conveying to purchasers in a brief form some idea of the arrangements required in Trussed Roofing, A. & J. MAIN & Co. here submit a series of "sections" for Trussed Iron Roofs of various spans up to 90 ft.; and it will be understood that the strength of Iron in the Rafters, Ties, &c., is increased in proportion to the width.



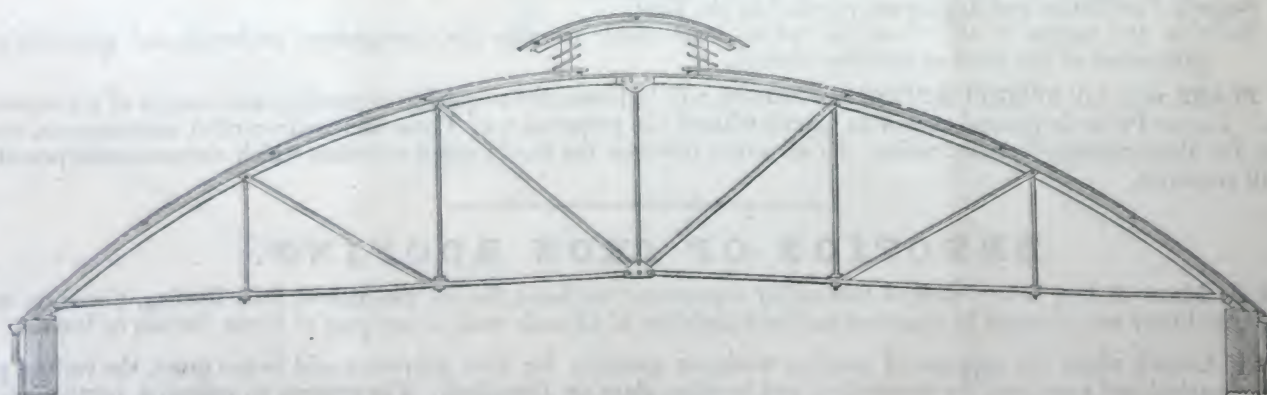
SECTION No. 5.—Suitable for Spans of 21 to 28 feet.



SECTION No. 6.—Suitable for Spans of 28 to 35 feet, with Overhanging Eaves.



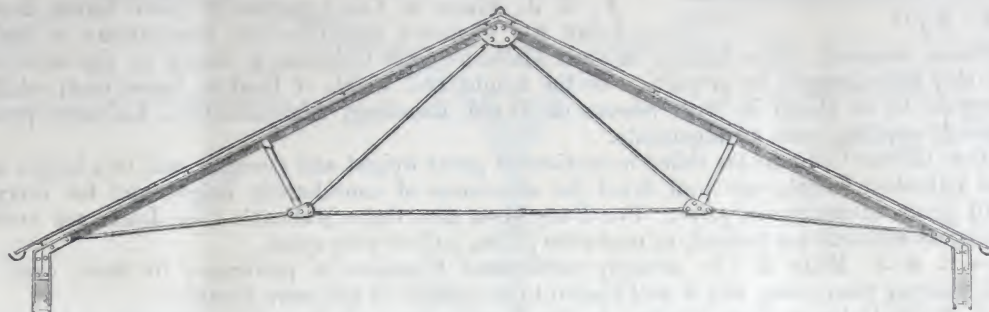
SECTION No. 7.—Suitable for Spans of 35 to 45 feet.



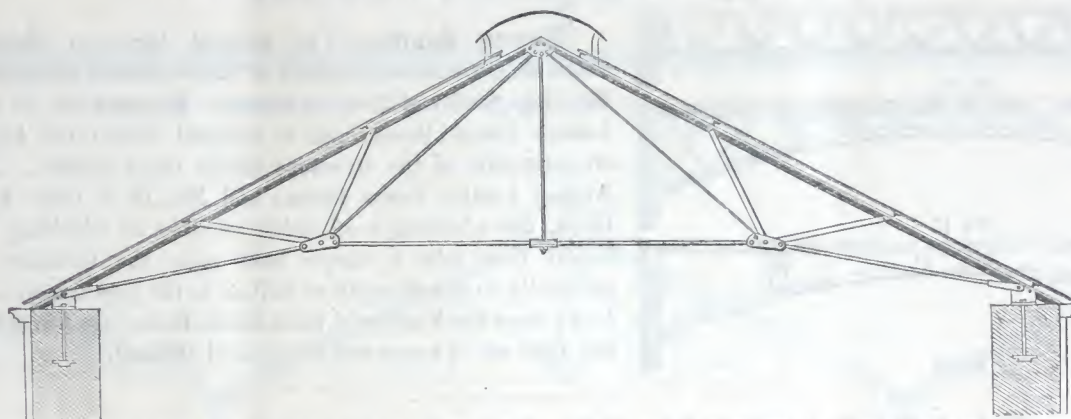
SECTION No. 8.—Suitable for Spans of 45 to 60 feet, shewing Curved Ventilator, with Louvre Boards, which may be used with any of the foregoing Sections.

TRUSSED IRON ROOFING, RIDGED SECTIONS.

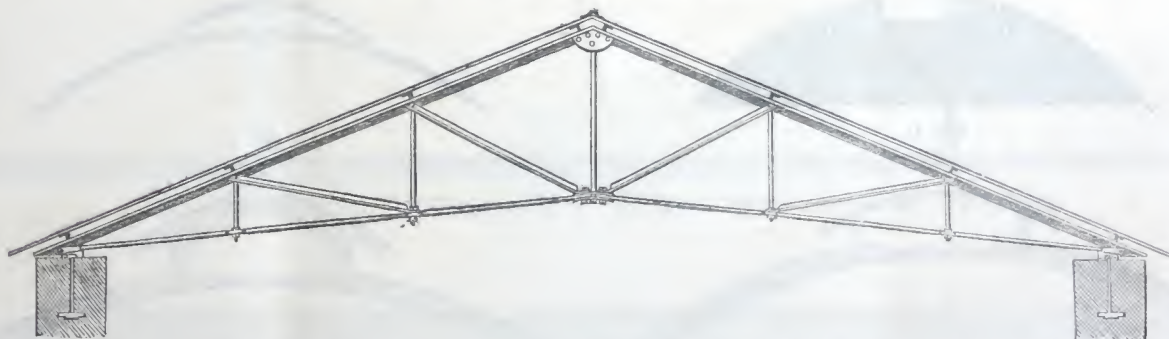
The distinctive feature of "TRUSSED ROOFING" is that Iron Principals with Trusses are used, and impart the chief strength to the Roof. Hence it is that the thickness or gauge of the Sheets in this class of Roofing is more a question of durability than one affecting the strength of the Structure. Trussed Roofs may be either Ridge-shaped or Curved, and in both it is to the Rafters or "Principals," Purlin-Bars, Tie-Rods, and Struts that the "Rule of Safety" must be applied; and it is of essential importance to see that these are of an arrangement and strength in proportion to the width.



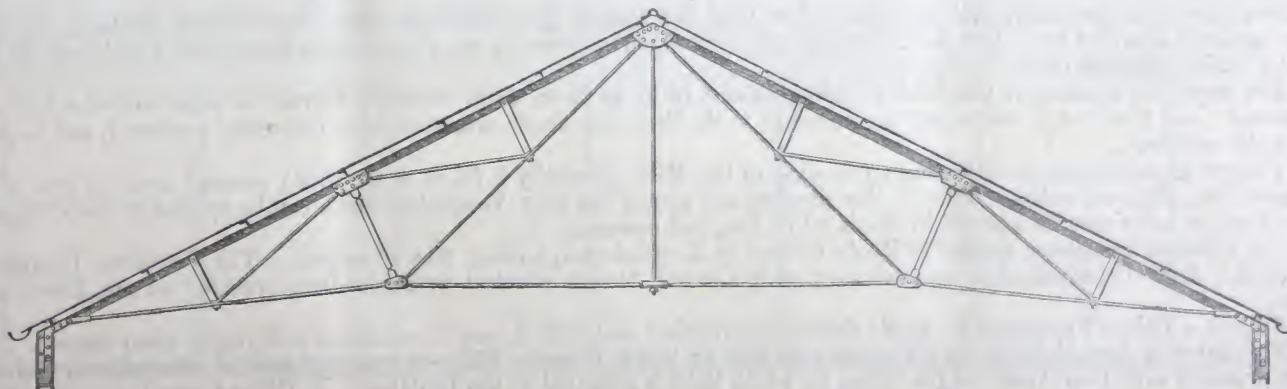
SECTION No. 1.—Suitable for Spans of 25 to 35 feet.



SECTION No. 2.—Suitable for Spans of 35 to 50 feet, shewing Curved Ventilator on Apex, which can be applied to any of the Sections.



SECTION No. 3.—Suitable for Spans of 50 to 70 feet.



SECTION No. 4.—Suitable for Spans of 70 to 90 feet.

IRON STRUCTURES.

IN Iron Structures, the COLUMNS, EAVES BEAMS, and VENTILATION, form essential elements of strength and convenience, and must be most carefully considered.



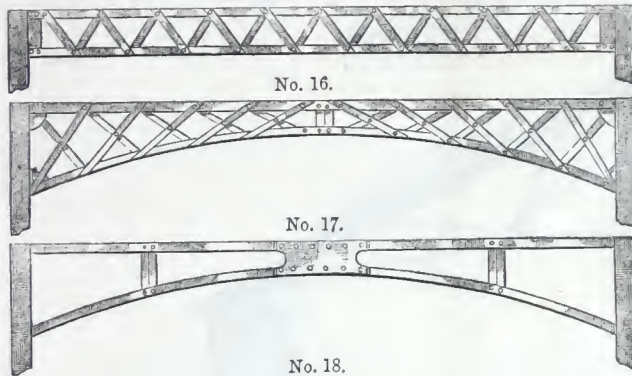
No. 15.

satisfactory combination is obtained. The Section of their Malleable-Iron Columns is shewn by the *annexed Diagram*; and, of course, they vary in size and strength in proportion to the height and width of Roof to be carried; while, if the sides of a Shed or Building require to be closed in with Sheets or Wood Boarding, Malleable-Iron Columns possess special facilities for easily and economically applying such arrangements.

These Malleable-Iron Girder Columns are rolled in sections of great weight and strength, and to a length of upwards of 30 ft.; and from being in an unbroken length, are well fitted for structures of considerable height and for carrying machinery and other heavy loads, with great advantage in price. For FLOORING, also, these Malleable-Iron Joists are invaluable. With them FIRE-PROOF Floors of great strength are formed, at moderate prices, and of wide spans.

Foundations.—A. & J. MAIN & Co. strongly recommend Concrete in preference to stone, even where the latter is plentiful. Concrete is cheaper than stone, and is well known to be equally, if not more durable.

To the lower end of the Columns IRON BASES are fitted, which are sunk into the Concrete; and thus the Foundation and Column are practically one solid mass, imparting great strength and security to the structure.



No. 16.

No. 17.

No. 18.

Eaves Beams.—The *annexed Diagrams* illustrate A. & J. MAIN & Co.'s three varieties of Eaves Beams, adopted when Sheds or Buildings wholly of Iron are desired. Diagram No. 16 is their Straight Lattice Eaves Beam, and is adopted where the height and other arrangements of the structure render them suitable. No. 17 is their Arched Lattice Eaves Beam; and No. 18 is their Arched Skeleton Beam, the advantages of which are, that in Shedding of considerable height they take a deeper hold upon the Columns, and thus add materially to the strength as well as to the appearance of the structure. In all cases the Frames of these Eaves Beams are formed of Angle-Iron, and they are in every way strong and efficient.

VENTILATION OF IRON SHEDDING.



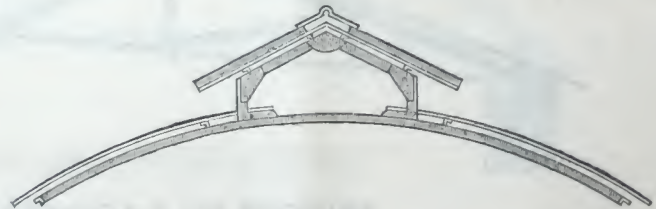
No. 1.



No. 2.



No. 3.



No. 4.

In Iron Shedding generally, and especially when used for storing Hay, Grain, or other Agricultural produce, ventilation should be carefully attended to. The above illustrations show the arrangements most generally adopted, and which will be found effective for their respective uses.

No. 1 is merely an opening in the End Cleadings, about 18 in. to 24 in. deep, causing a current to pass over the top of the produce stored; and from not necessitating any openings in the Roof, this simple arrangement is frequently preferred, and in general is found to be sufficient.

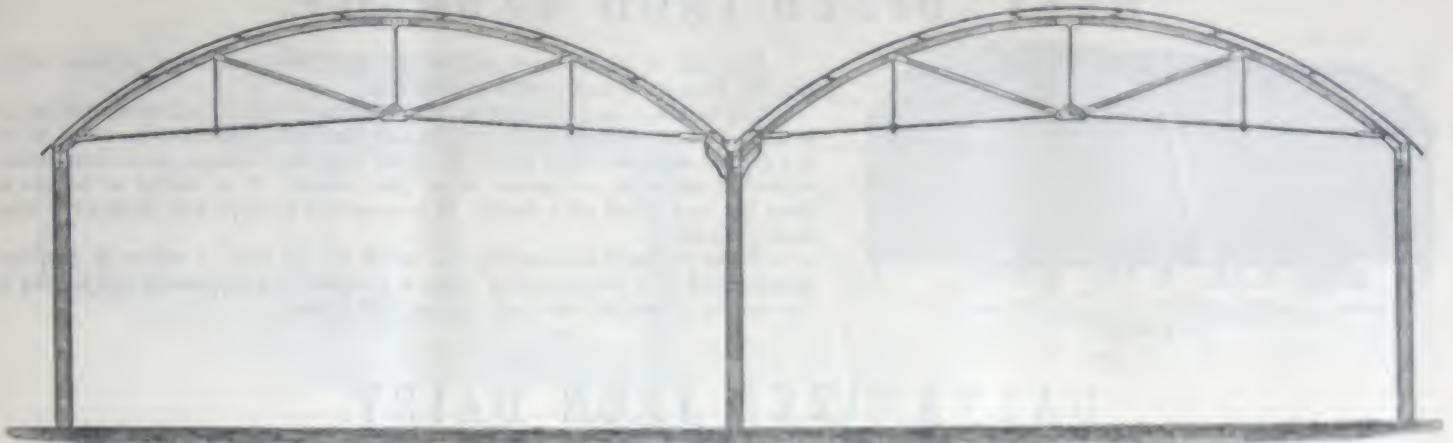
No. 2 shews an arrangement for having an opening in the Roof (generally 2 ft. or 4 ft. wide), covered over by two or three Sheets curved to a *different radius*. This is the simplest and almost the only Ventilator which can be applied to Self-Supporting Roofs; and one or more may be adopted in Sheds 60 ft. long and upwards.

No. 3 is a Raised Ventilator applied to Roofs, Curved or Ridge-shaped, having *Iron Principals*. The Ventilator Uprights are secured to the Roof Principals, and covered over with Curved Sheets attached to Purlin-Bars provided at the Eaves of the Ventilator.

No. 4 shews a Raised Ventilator for Roofs similar to foregoing, and with it may be combined a Skylight when desired. In this case the Ventilator is formed in the same manner as No. 3; but it is made Ridge-shaped, and may be covered with Galvanized Sheets, or provided with Iron Astragals for Glass, by which light is admitted to the Building. A Ridge Cover is necessary for the Apex. The Ventilators Nos. 3 and 4 are *not applicable* to Self-Supporting Roofs.

EXAMPLES OF IRON STRUCTURES.

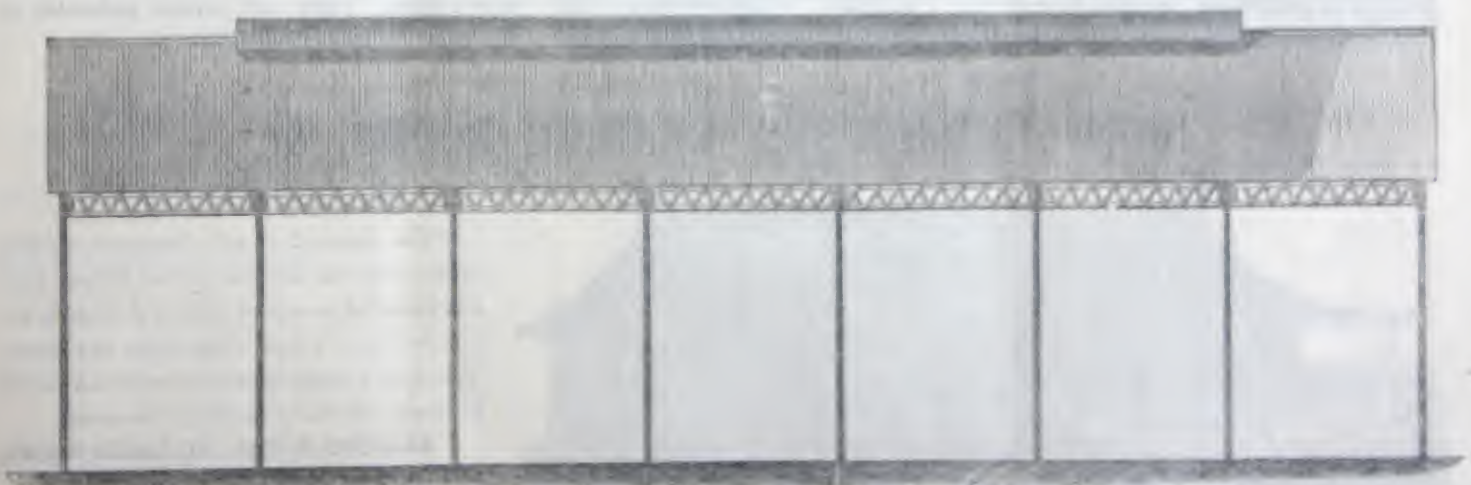
As a means of conveying an idea of some of the various combinations to which Iron Roofing in connection with Iron Columns, &c., can be applied, A. & J. MAIN & CO. submit a few Sections of the more ordinary arrangements which have been supplied by them at different times for Home and Foreign requirements; and they are prepared to submit Plans and Estimates of cost upon receiving the necessary dimensions and other particulars. *See Directions for Measurements, page 3.*



No. 20.—Section of Double-Span Curved Roof on Iron Columns.



No. 21.—Section of Three-Span Ridged Roof on Iron Columns.

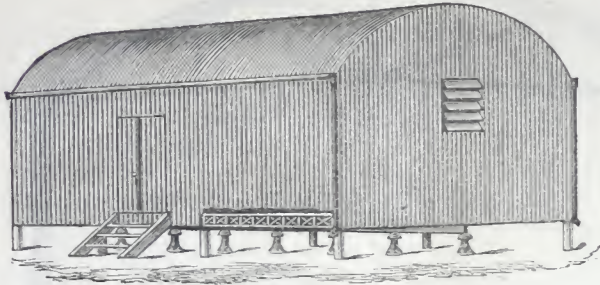


No. 22.—Elevation—showing Lattice Eaves Girders.

GALVANIZED IRON AND TIMBER ERECTIONS.

THE variety of Designs and Arrangements in this class of Iron Buildings is, practically, unlimited. Both at Home and in the Colonies Galvanized Iron with Wood Framing is very extensively used for an infinite variety of buildings which cannot here be referred to; but A. & J. MAIN & Co. are prepared to quote Prices for any description of work of this kind, including Timber if desired; and, for Home Orders, to Erect them in any part of the country.

GALVANIZED IRON GRANARY.



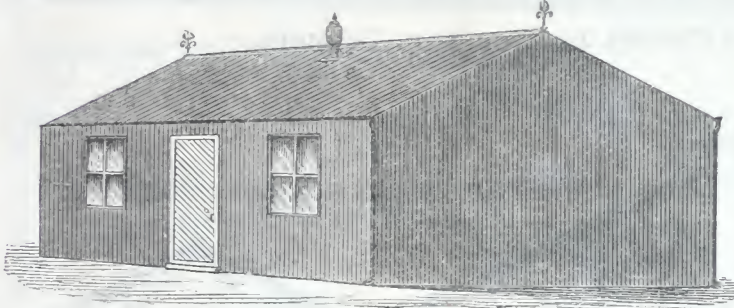
No. 359.

No. 359 is an arrangement for STORING GRAIN or other produce where freedom from damp and vermin are essential.

The building can be carried by iron columns if desired, but the most ordinary arrangement is to adopt wood uprights and framing. The floor can either be on the ground-level or raised about 18 inches upon the Columns, as in Illustration, or with brick walls, to prevent damp from below. It is also of advantage to have the roof ceiled with timber, to prevent the possibility of damp or a drop from the roof.

When rendered necessary by the width of the store, a range of cast-iron pillars, fitted with Vermin-proof Caps, is provided for supporting the joisting in the centre; or a light brick wall can be built instead.

GALVANIZED IRON DAIRY.

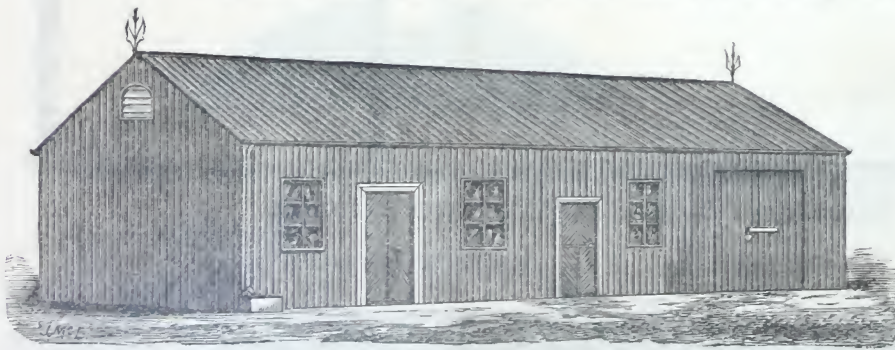


No. 387.

No. 387 illustrates a Dairy constructed of Galvanized Iron in a simple and inexpensive form. The roof is carried by wood framework, and it is lined and ceiled with timber throughout. The floor should be laid with tiles, and internal arrangements can be fitted up in the usual manner.

To give thorough ventilation, one or more Archimedian Ventilators are fitted in the roof, according to size.

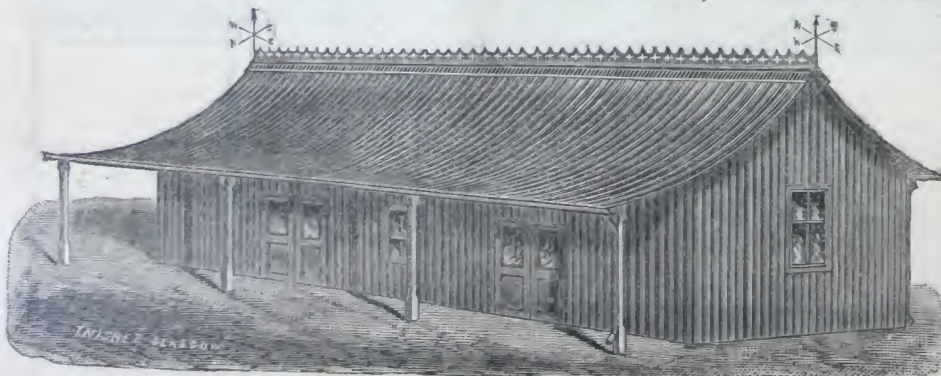
GALVANIZED IRON STABLES, COACH-HOUSE, &c.



No. 405.

No. 405 shews the application of Galvanized Iron to a Stable, Coach-House, and Harness-Room, which can, of course, be built to any dimensions, and to accommodate any number of animals or vehicles. The Stable may stand alone, or may be combined with Harness-Room and Coach-House, as shewn in the Illustration. The Framing is usually of wood, and the buildings are lined and ceiled with timber throughout, and thoroughly well ventilated—the whole forming a strong, durable, and commodious set of offices at a small cost as compared with mason work. Plans and Prices forwarded on receiving necessary dimensions.

IRON CLUB-HOUSES, READING ROOMS, &c.



No. 421.

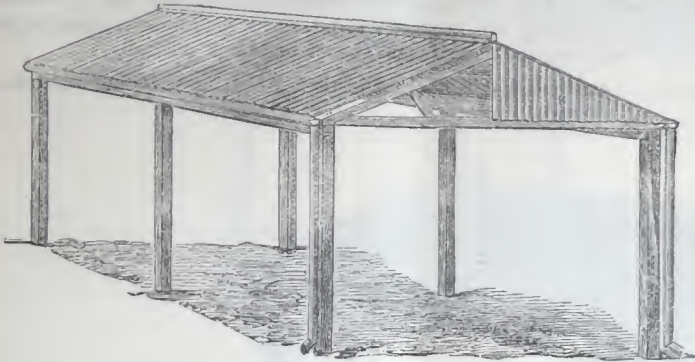
The design No. 421 illustrates a Club-House with an Inverted-curved Ridged Roof and Verandah, as erected by A. & J. MAIN & Co. for the Lawn Tennis Club, Sligo, and others. This style of Building can be erected in a variety of forms, and to any required dimensions.

READING ROOMS, BILLIARD ROOMS, COTTAGES, and all other similar erections.

GALVANIZED IRON ROOFING ON TIMBER FRAMING.

Galvanized Sheets can be advantageously applied to a variety of purposes, less or more permanent, where Timber Uprights and Framing are used; and a few examples of such arrangements are here subjoined.

RIDGE-SHAPED ROOF ON WOOD FRAMING.



No. 319 illustrates the application of Galvanized Sheets to an ordinary Ridge-shaped Roof with Wood Framing. In this construction of Roof Timber Framing is essential; and hence Curved self-supporting Roofs for spans up to about 28 feet, are generally the cheapest when cost of Framing is added.

SPECIFICATION.—Best Galvanized Corrugated Sheets No. 22 W.G. for Roof, Ridge-Cover, Guttering and Down-Piping, Bolts and Nuts, &c. The Sheets for cleading ends down to level of Eaves, marked B on illustration, are *not* included, but are quoted for extra.

When Timber is supplied, the Uprights stand 12 feet above ground, and are placed 10 feet to 12 feet apart, with Eaves Beams, Tie-Bars, Rafters and Purlin Bars.

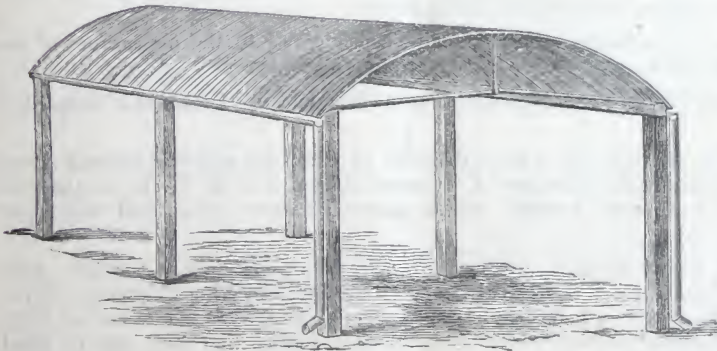
PRICES.

| Roof 30 ft. long by 12 ft. wide, | | | | | | Without Timber. | | | With Timber. | | | Roof 50 ft. long by 18 ft. wide, | | | | | | Without Timber. | | | With Timber. | | |
|----------------------------------|---|----|---|---|---|-----------------|----|---|--------------|----|---|----------------------------------|---|----|---|---|---|-----------------|----|---|--------------|----|---|
| | | | | - | - | £10 | 0 | 0 | £21 | 0 | 0 | | | | | - | - | £22 | 15 | 0 | £42 | 0 | 0 |
| " 40 | " | 12 | " | - | - | 12 | 15 | 0 | 26 | 10 | 0 | " 60 | " | 18 | " | - | - | 27 | 10 | 0 | 50 | 0 | 0 |
| " 30 | " | 15 | " | - | - | 12 | 5 | 0 | 25 | 0 | 0 | " 40 | " | 20 | " | - | - | 20 | 0 | 0 | 37 | 0 | 0 |
| " 40 | " | 15 | " | - | - | 16 | 0 | 0 | 30 | 10 | 0 | " 50 | " | 20 | " | - | - | 24 | 0 | 0 | 44 | 10 | 0 |
| " 50 | " | 15 | " | - | - | 19 | 10 | 0 | 36 | 10 | 0 | " 60 | " | 20 | " | - | - | 28 | 15 | 0 | 52 | 10 | 0 |
| " 60 | " | 15 | " | - | - | 23 | 10 | 0 | 43 | 10 | 0 | " 70 | " | 20 | " | - | - | 33 | 10 | 0 | 61 | 10 | 0 |
| " 30 | " | 18 | " | - | - | 14 | 0 | 0 | 26 | 0 | 0 | " 80 | " | 20 | " | - | - | 38 | 10 | 0 | 70 | 0 | 0 |
| " 40 | " | 18 | " | - | - | 18 | 15 | 0 | 34 | 10 | 0 | " 90 | " | 20 | " | - | - | 43 | 10 | 0 | 78 | 10 | 0 |

End Cleavings to Eaves for both Ends, 12 ft. wide, 25s.; 15 ft. wide, 35s.; 18 feet. wide, 45s.; and 20 ft. wide, 55s. *additional* to each roof.

 All Prices are quoted SUBJECT TO ALTERATION according to the state of the Iron Market at the time of ordering.

GALVANIZED SELF-SUPPORTING ROOFING ON WOOD UPRIGHTS.



This Design illustrates one of the simplest forms of a Self-supporting Galvanized Iron Roof. The Uprights and Eaves Beams are of Timber; but in the Roof itself it is necessary to have the "Crown" or "Purlin" Bar and other arrangements already described. It is also an essential point to have the Sheets secured to the Eaves Beams by Screws and Washers of sufficient length and strength; and in the purchase of such Roofs this should be carefully looked to.

No. 318.—SPECIFICATION AND PRICES.

The Roof is formed of Best Galvanized Corrugated Curved Sheets, No. 22 B.W.G., with necessary Bolts, Nuts and Washers, Tie-Rods with "King" Posts; and a "Crown" Bar of Angle Iron (to which the Sheets are secured by A. & J. MAIN & Co.'s Wrought-Iron "Clips") runs from end to end of the Roof.

All Sheds of this kind should have *both Ends Clad to level of Eaves*, and prices for this Cleading are quoted separately.

Iron Guttering is supplied for each side with Down-piping for two ends. For the Sheds 22 ft. and 24 ft. Span, *double* Struts or "Queen" Posts, and *two* "Purlin" Bars, as illustrated by Section No. 11, Page 2, are provided.

When Timber for this Shedding is supplied by A. & J. M. & Co., the Uprights go 30 ins. into ground and stand 12 ft. above ground, and are placed at 10 ft. to 12 ft. apart, with an Eaves Beam for each side.

| | | | | Single Span, Without Timber. | | Single Span, With Timber. | | | | | | Single Span, Without Timber. | | Single Span, With Timber. | | | | | | | | | | | |
|----------------------------------|----|---|----|---------------------------------|---|------------------------------|----|----|-----|----|----|----------------------------------|---|------------------------------|---|----|---|-----|---|----|-----|---|----|----|---|
| Shed 30 ft. long by 15 ft. wide, | | | | - | - | £14 | 10 | 0 | £21 | 10 | 0 | Shed 40 ft. long by 22 ft. wide, | | | | - | - | £28 | 0 | 0 | £38 | 0 | 0 | | |
| " | 40 | " | 15 | " | - | - | 18 | 15 | 0 | 28 | 0 | 0 | " | 50 | " | 22 | " | - | - | 34 | 0 | 0 | 45 | 10 | 0 |
| " | 50 | " | 15 | " | - | - | 23 | 0 | 0 | 34 | 10 | 0 | " | 60 | " | 22 | " | - | - | 40 | 0 | 0 | 53 | 0 | 0 |
| " | 60 | " | 15 | " | - | - | 27 | 10 | 0 | 41 | 10 | 0 | " | 70 | " | 22 | " | - | - | 46 | 10 | 0 | 61 | 0 | 0 |
| " | 40 | " | 20 | " | - | - | 23 | 0 | 0 | 32 | 10 | 0 | " | 60 | " | 24 | " | - | - | 43 | 10 | 0 | 56 | 0 | 0 |
| " | 50 | " | 20 | " | - | - | 29 | 0 | 0 | 40 | 0 | 0 | " | 70 | " | 24 | " | - | - | 50 | 0 | 0 | 65 | 0 | 0 |
| " | 60 | " | 20 | " | - | - | 35 | 0 | 0 | 47 | 10 | 0 | " | 80 | " | 24 | " | - | - | 57 | 10 | 0 | 73 | 10 | 0 |
| " | 70 | " | 20 | " | - | - | 41 | 0 | 0 | 55 | 0 | 0 | " | 90 | " | 24 | " | - | - | 64 | 0 | 0 | 92 | 10 | 0 |

Cleaving for two Ends down to Eaves, including *Angle Iron Principal and Framing* for each end of Shed, with Sheets, Bolts and Nuts, &c., 15 ft. wide, £5 15s.; 20 ft. wide, £7 15s.; 22 ft. wide, £8 15s.; 24 ft. wide, £9 15s.

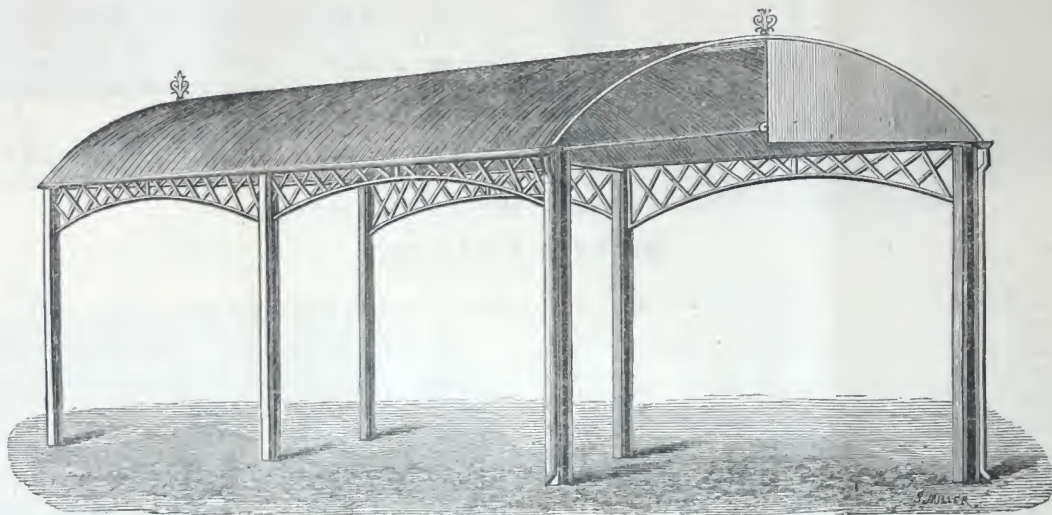
Any other Sizes not here specified supplied at proportionate rates. All delivered Free at principal Railway Stations, or at Seaports in Ireland.

GALVANIZED IRON HAY AND GRAIN SHEDS OR STORES, WITH IRON COLUMNS.

In the farmyard of the agriculturist sheds for storing hay, grain, and other produce are now indispensable. By their use the expense of thatching—an important item—is not only *SAVED*, but what is even of greater importance in an uncertain climate, the hay or grain, requiring no delay for thatching, is *safe immediately it reaches the yard*.

In this necessary adjunct to the farm, Galvanized Iron Shedding, with Iron columns, meets an important want in forming a complete and permanent erection; and its construction on proper principles thus becomes a question of the greatest importance to Agriculturists. It is here, also, that the self-supporting principle in Iron Roofing, combined with A. & J. MAIN & Co.'s Iron Columns and Eaves Beams, gives it the advantage over all other kinds in providing storage accommodation possessing the necessary elements of *EFFICIENCY, CHEAPNESS, PERMANENCE, FREEDOM FROM FIRE*, and requiring *NO ANNUAL REPAIRS*, as is the case with slated roofs and timber buildings generally.

A. & J. MAIN & Co. solicit careful inquiry into the various arrangements and details adopted in their All-Iron Shedding and other Buildings, and reference is made to the preceding pages of this Catalogue.



No. 320.

Design No. 320 illustrates A. & J. MAIN & Co.'s "Self-supporting" Iron Roof, carried by their *WROUGHT-IRON COLUMNS* and *LATTICE IRON EAVES BEAMS*, as already fully explained.

The Columns are of a strong section of Malleable-Iron, made to fix into concrete foundations or stone; but the former is now almost universally adopted, even where stone is plentiful. For supporting Iron Roofing, *MALLEABLE-IRON COLUMNS* possess strength equal to Cast-Iron, but are less expensive and less liable to breakage, while they are lighter for transit by sea or land.

The *EAVES BEAMS* are of Wrought-Iron Lattice Work, arched and of sufficient strength, adding considerably to the appearance of the structure, and, from dispensing with all wood work, render the shed *THOROUGHLY FIRE-PROOF* and greatly more durable.

The *ENDS* are shewn clad down to Eaves, for which *Angle-Iron End Principals and Framing* are provided; and this Cleading is *included* in the subjoined Prices.

With *TIE-BARS*, "King Posts," Angle-Iron Crown Bar, and A. & J. MAIN & Co.'s Iron Brackets or Clips for securing the roof sheets to the crown bar, as previously illustrated and explained, this construction, with Galvanized Corrugated Sheets, No. 22 W. G. in the roof and for end cleading, is sufficient for spans up to 20 feet, and forms a substantial, durable, and permanent structure, which will well repay the investment.

SPECIFICATION.—The Columns are placed at 15 ft. apart, and stand 12 ft., 14 ft., 16 ft., and 18 ft. high above ground. Iron Lattice Girder Beams are supplied for the Eaves, (but prices are also quoted for Wood Eaves Beams;) Tie-Bar and King Post every 15 ft.; a Crown Bar of Angle-Iron, (to which Sheets are secured by A. & J. MAIN & Co.'s Wrought-Iron Brackets,) runs from end to end of Roof, and Angle-Iron Framing and Cleading for each end down to Eaves; Galvanized Sheets No. 22 W. G. of best quality, and each side of Shed fitted with Guttering and Down-Piping, &c., complete.

For A. & J. MAIN & Co.'s arrangements for ventilators, see page 6.

PRICES.

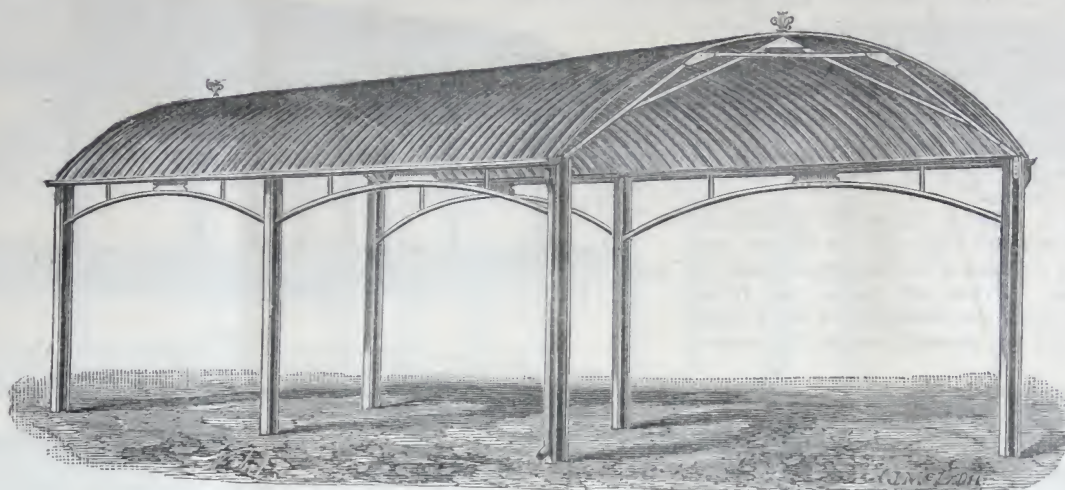
| | 12 ft. high. | | 14 ft. high. | | 16 ft. high. | | 18 ft. high. | |
|----------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. |
| Shed 30 ft. long by 15 ft. wide, | £33 10 0 | £37 10 0 | £34 10 0 | £38 10 0 | £35 10 0 | £40 0 0 | £41 10 0 | £45 0 0 |
| " 45 " 15 " | 41 10 0 | 47 10 0 | 42 10 0 | 48 10 0 | 44 0 0 | 50 0 0 | 50 0 0 | 57 10 0 |
| " 60 " 15 " | 51 10 0 | 60 0 0 | 53 0 0 | 61 10 0 | 56 0 0 | 64 0 0 | 62 10 0 | 70 0 0 |
| " 45 " 20 " | 48 10 0 | 54 10 0 | 50 0 0 | 56 10 0 | 52 10 0 | 58 10 0 | 58 10 0 | 65 0 0 |
| " 60 " 20 " | 60 0 0 | 69 0 0 | 61 10 0 | 71 0 0 | 65 0 0 | 73 10 0 | 72 10 0 | 81 10 0 |
| " 75 " 20 " | 72 10 0 | 82 10 0 | 75 0 0 | 85 0 0 | 78 0 0 | 88 10 0 | 86 10 0 | 96 10 0 |
| " 90 " 20 " | 85 0 0 | 97 10 0 | 87 10 0 | 100 0 0 | 91 10 0 | 103 10 0 | 102 10 0 | 115 0 0 |

All delivered free at principal Railway Stations, or at Seaports in Ireland.

All Prices quoted are *SUBJECT TO ALTERATION*, according to the state of the Iron Market at the time of ordering; and Current Prices, including erection if desired, will be forwarded on application. In general it is preferable to have this and other all-iron Shedding erected by A. & J. MAIN & Co.'s workmen.

For Testimonials, see pages 12, 13, and 16.

NEW GALVANIZED IRON SHEDDING, CONSTRUCTED WITHOUT TIE-RODS.



No. 415.

The special feature in this New form of Shed is that the Roof is constructed *without* the ordinary Tie-bars which stretch across a Shed, and which, especially in the smaller Sheds used for storing Hay and Grain, &c., are frequently complained of. The effect of Tie-bars in a Shed where the Grain is stored lengthways, is to diminish its storing capacity, as space for the Ties must be left clear.

By this NEW CONSTRUCTION OF ROOF now introduced by A. & J. MAIN & Co., *all Tie-bars are dispensed with*, and its strength and stability are secured by a system of Iron Lattices Spanning the Roof. In this way clear head-room to within a few inches of the Roof Sheets is obtained for storage, and the storing capacity of the Shed is thus greatly increased.

In other respects the Roof and Framing are constructed in the same manner as Design No. 320 and other approved arrangements. The Eaves Beams are of strong Angle-Iron, under a new and improved construction, securing great stiffness and strength, while the Prices are very little in excess of the Lattice arrangement.

For Sheds from 20 feet to about 24 feet wide this New form of Roof is well adapted; and Prices are here submitted for a few sizes 20 feet wide.

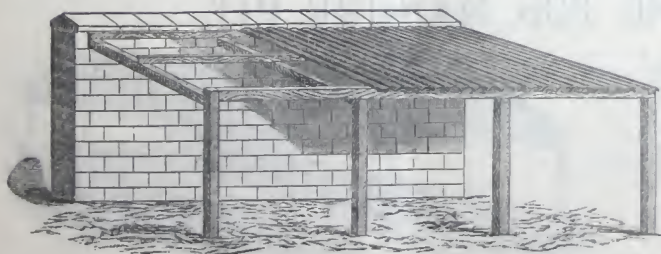
SPECIFICATION AND PRICES.

No. 415.—The Columns are of Malleable-Iron, are placed at 15 ft. apart and stand 12 ft., 14 ft., 16 ft., and 18 ft. high above ground. Arched Iron Beams are supplied for the Eaves; but Prices are also quoted for Wood Eaves Beams. A Crown Bar of Angle-Iron runs from end to end of Roof, to which, and to Eaves, the Sheets are secured by A. & J. MAIN & Co.'s New Wrought-Iron Clips, and Lattice Iron Bracings Span the Roof every 15 ft. The Ends are clad down to level of Eaves, for which Angle-Iron Principals and Framing are provided, with Gutters and Down-Piping for each side.

| | 12 ft. high. | | 14 ft. high. | | 16 ft. high. | | 18 ft. high. | |
|----------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. |
| Shed 30 ft. long by 15 ft. wide, | £35 0 0 | £39 0 0 | £36 0 0 | £40 0 0 | £37 10 0 | £41 10 0 | £43 0 0 | £47 0 0 |
| „ 45 „ 15 „ | 43 10 0 | 49 10 0 | 44 10 0 | 50 10 0 | 46 0 0 | 52 0 0 | 54 0 0 | 60 0 0 |
| „ 60 „ 15 „ | 55 0 0 | 62 10 0 | 56 10 0 | 64 0 0 | 59 0 0 | 66 10 0 | 65 10 0 | 73 0 0 |
| „ 45 „ 20 „ | 50 10 0 | 57 10 0 | 53 0 0 | 59 10 0 | 55 0 0 | 61 10 0 | 61 10 0 | 68 0 0 |
| „ 60 „ 20 „ | 62 10 0 | 71 10 0 | 64 10 0 | 75 0 0 | 67 10 0 | 77 10 0 | 75 10 0 | 84 0 0 |
| „ 75 „ 20 „ | 75 0 0 | 85 0 0 | 78 0 0 | 80 0 0 | 82 0 0 | 92 10 0 | 90 0 0 | 100 0 0 |
| „ 90 „ 20 „ | 88 10 0 | 101 0 0 | 91 10 0 | 104 0 0 | 95 0 0 | 107 10 0 | 107 10 0 | 120 0 0 |

All delivered free to principal railway stations, or to seaports in Ireland.

GALVANIZED IRON LEAN-TO ROOF, FOR CART OR IMPLEMENT SHEDS.



No. 321 is a Lean-to Roof with Timber Uprights and Framing, very suitable for Cart or Implement Sheds and for many other purposes. The Sheets can be applied to this and to Ridged Roofs with great facility; and with the light framing required, Galvanized Sheets form the cheapest Covering that can be adopted.

Iron Columns and Iron Rafters in the Roof, or Iron Columns with Timber Rafters, can be adopted when desired. Extra Prices on application.

For Roofing of this kind wholly of iron, see design No. 423, page 14.

NOTE.—In sending dimensions of Lean-to Roofs, the measurements should be given from *face* of back-wall to *outside* of uprights or wall in front.

PRICES.—The following are the prices of Sheets, (No. 22 B.W.G.) with Galvanized Bolts, Screws, &c., for fixing to Wood Framing, for a few sizes; but Gutters or Piping are not included.

| | | | | | | | | | | | | |
|----------------------------------|---|---|---|---|--------|----------------------------------|---|---|---|---|---|---------|
| Roof 30 ft. long by 10 ft. wide, | - | - | - | - | £5 7 6 | Roof 30 ft. long by 15 ft. wide, | - | - | - | - | - | £7 12 6 |
| „ 40 „ 10 „ | - | - | - | - | 8 5 0 | „ 40 „ 15 „ | - | - | - | - | - | 10 2 6 |
| „ 30 „ 12 „ | - | - | - | - | 6 5 0 | „ 50 „ 15 „ | - | - | - | - | - | 12 15 0 |
| „ 40 „ 12 „ | - | - | - | - | 8 7 6 | „ 60 „ 15 „ | - | - | - | - | - | 15 5 0 |

HAY AND GRAIN SHEDS—CONTINUED.

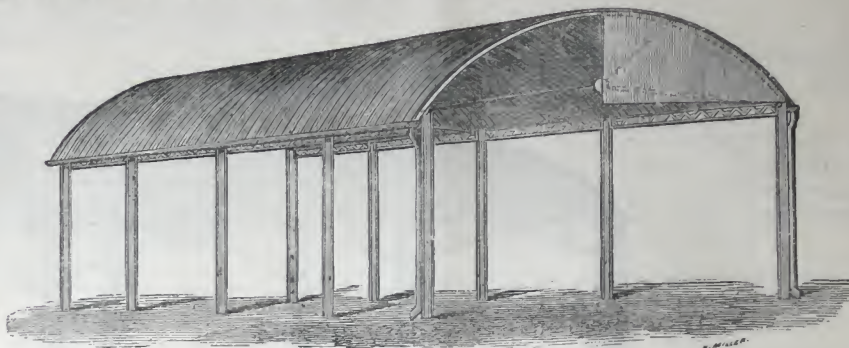
Design No. 334 shews a self-supporting Roof fitted with "Queen Posts" or double Struts, and having two Angle-Iron Crown Bars in Roof—see diagram No. 11, page 2—suitable for spans from 22 feet up to 24 feet.

In this case the Eaves Beams are shewn of straight lattices, from 9 inches to 12 inches deep; but for shedding of the height required for hay and grain stores, the arched lattices—see foregoing designs, No. 17 and 18, page 6—are preferable, from their depth at the ends taking a fuller hold upon the Columns.

The cost of A. & J. MAIN & Co.'s Iron Shedding is reduced by the substitution of WOOD EAVES BEAMS; and their Malleable-Iron Columns afford important facilities for this arrangement. Prices are quoted for Wood Eaves Beams; but from the durability of the Lattice Iron Eaves Beams they are generally adopted in preference to timber.

Any of these Sheds can be clad down to ground, or any shorter distance, with Galvanized Sheets or Wood Boarding, when required. Prices on application.

SPECIFICATION.—The details of this Shedding are precisely the same as No. 320, but the Roof is constructed with "Queen Posts," and two Angle-Iron Crown-Bars, with A. & J. MAIN & Co.'s Iron Brackets or Clips.



No. 334.

PRICES.

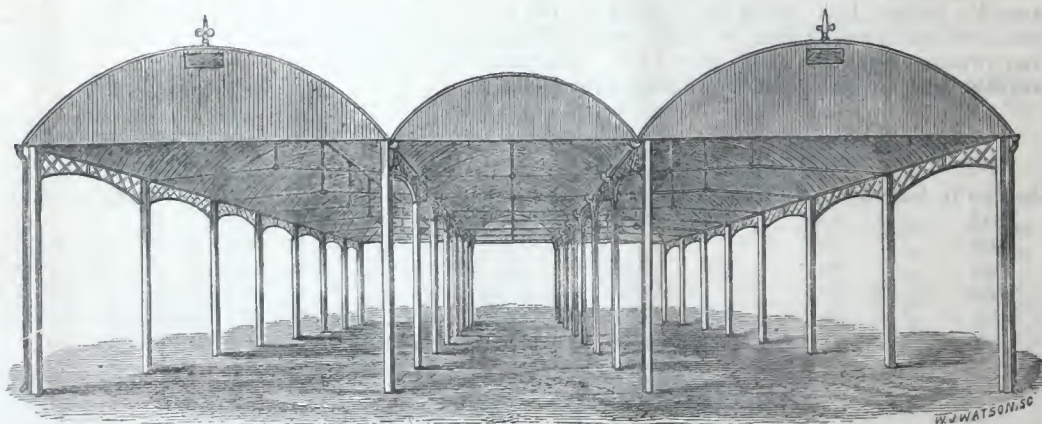
| | 12 Feet High. | | 14 Feet High. | | 16 Feet High. | | 18 Feet High. | |
|----------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. |
| Shed 60 ft. long by 22 ft. wide, | £66 10 | £75 0 | £68 0 | £76 10 | £69 10 | £78 10 | £76 10 | £86 0 |
| " 75 " 22 " | 80 0 | 89 10 | 82 10 | 92 0 | 85 0 | 94 10 | 92 10 | 102 10 |
| " 90 " 22 " | 88 0 | 105 0 | 91 10 | 108 10 | 95 0 | 111 10 | 103 10 | 120 0 |
| " 60 " 24 " | 71 10 | 80 0 | 73 0 | 81 10 | 74 10 | 83 0 | 80 0 | 90 0 |
| " 75 " 24 " | 84 0 | 93 10 | 86 10 | 96 0 | 89 0 | 98 10 | 97 10 | 107 10 |
| " 90 " 24 " | 100 0 | 115 0 | 103 10 | 118 10 | 107 0 | 122 0 | 115 0 | 127 10 |

All delivered Free at Principal Railway Stations, or at Seaports in Ireland.

COMBINATIONS OF IRON SHEDDING.

No. 355 shews a combination of two Sheds running parallel to each other, with a covered-way between, which may be made any width. This covered-way is valuable as a protection while loading or unloading grain or other produce; and it likewise forms an addition to the Shedding accommodation, or a Store for implements, &c., when not otherwise required.

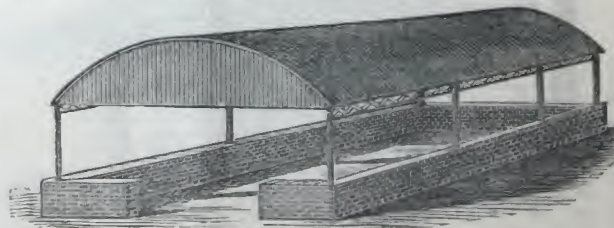
A wide variety of other combinations can be adopted as circumstances require.



No. 355.

GALVANIZED IRON COVERING FOR MANURE PIT.

No. 365 illustrates a Covering of Galvanized Iron for a Manure Pit; and Iron Roofing is now largely adopted for this purpose. The Roof is carried by A. & J. MAIN & Co.'s Wrought-Iron Columns, which are battened into the side walls if of stone; or the Columns can be set into concrete foundations, and light brick or concrete walls built between; but unless the walls are built specially for the reception of the Shed, the latter plan will be found the strongest and best arrangement.



TESTIMONIAL.

Messrs. A. & J. MAIN & Co.

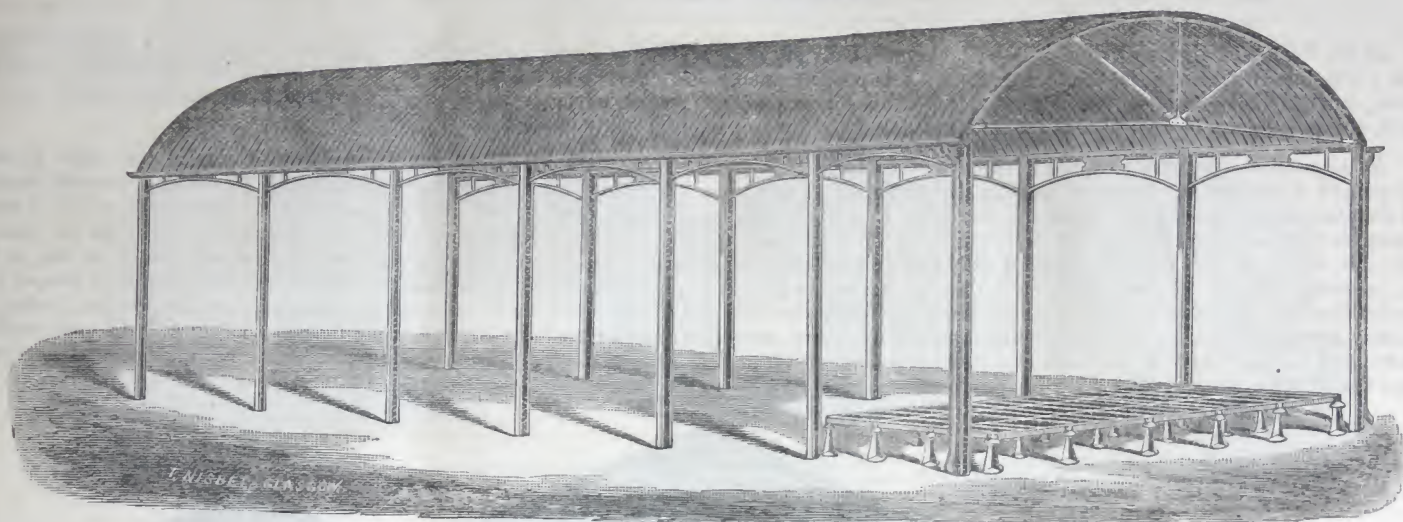
GENTLEMEN,—The Open Shed you erected for the DUKE OF WELLINGTON gives the greatest satisfaction; and a great saving is effected in covering the MANURE YARDS with this Shedding, which is much cheaper than any other structure.—I remain, Gentlemen, yours truly,

108 Queen Victoria Street, London.

STRATHFIELDSAYE, WINCHFIELD, HANTS, 2nd November, 1880.

WALTER MOUSLEY.

GALVANIZED IRON GRAIN STORES, OF WIDE SPANS.



No. 455.

Agriculturists are now so fully impressed with the advantages of Iron Shedding for storing Grain that Buildings of greater width and capacity are now very generally adopted upon large Farms, and are found to be more economical in cost for the space requiring to be covered, as well as more advantageous in use for the large quantities of produce requiring to be stored.

This Design, No. 455, illustrates a Shed to meet such requirement, made 30 feet wide, with a Curved Roof on the TRUSSED PRINCIPLE carried by A. & J. MAIN & Co.'s Malleable-Iron Columns with Iron Eaves Beams, and forms one of the most valuable permanent additions which can be made to the Offices of a Farm. In this wide Shedding it is intended to build the Stacks across the Shed and not lengthways; and in storing Grain this permits the different kinds to be conveniently assorted and improves the ventilation.

In the Illustration an IRON RICKSTAND, vermin proof, is shewn. The dimensions of this Shed greatly facilitates the adoption of this important addition, and the two combined form a perfect Grain Store for large Holdings.

A. & J. MAIN & Co. have erected Sheds of this kind for SIR GEORGE R. SITWELL, Bart., on the Farm of Mr. Styring, near Rotherham; for SAMUEL SKINNER, Esq., Waleswood Colliery, Sheffield; for RICHARD ATHERTON, Esq., Mount Pleasant, Speke, Liverpool; for J. P. KIDSTON, Esq., Nyn Park, Barnet, Herts; and many others.

SPECIFICATION.

In the Roof there are Iron Principals with Tie-bars, Struts, &c., of sufficient strength for the width of span, with Iron Columns for concrete foundations; Angle-Iron Purlin-Bars and strong Iron Eaves Beams. Gutting and Piping for each side; Sheets of best quality, No. 22 W. G., and ends closed down to level of Eaves. Rick Stands are *extra* to the Prices here submitted.

PRICES.

| | | 14 ft. high. | 16 ft. high. | 18 ft. high. |
|-----------------------------|-----------|--------------|--------------|--------------|
| 75 ft. long by 30 ft. wide, | - - - - - | £122 10 0 | £127 0 0 | £130 0 0 |
| 90 " " | - - - - - | 142 10 0 | 148 0 0 | 151 10 0 |
| 105 " " | - - - - - | 162 10 0 | 169 0 0 | 173 0 0 |
| 120 " " | - - - - - | 182 10 0 | 190 0 0 | 194 10 0 |
| 135 " " | - - - - - | 202 10 0 | 211 0 0 | 216 0 0 |

Delivered to principal Railway Stations, or to Seaports in Ireland. Quotations, including Erection, forwarded on application.

TESTIMONIALS.

STAKES HILL LODGE, NEAR COSHAM,
HANTS, 3rd November, 1880.

GENTLEMEN,—The Shed for stacking corn which you put up for me at Bedgrove, Aylesbury, in July last, proves quite satisfactory. The Rolled Girder Columns are substantial, and the arched Lattice Eaves Beams a great improvement. Your workmen took considerable trouble, and executed the whole thoroughly. Mr. Morris, the tenant, finds it a great convenience and saving, particularly when harvest weather is uncertain.—Yours faithfully,

GEO. A. HULBERT.

Messrs. A. & J. MAIN & Co.

WESTFIELD, MOUNTRATH.

DEAR SIR,—In reply to your inquiry, the Iron Roof erected by you in my cattle yard at Dromrahan, stood the recent gales most satisfactorily, in fact nothing could be better. Not a rivet started, nor the roof strained in the least. I am greatly pleased at the manner in which all your work was executed.—I am, yours faithfully,

MAT. H. FRANKS.

Messrs. A. & J. MAIN & Co.

BALLIN TEMPLE, TULLOW, CO. CARLOW.

Sir Thomas P. Butler begs to say, in reply to Messrs. Main & Co.'s letter of 9th inst., that the Hay Barn erected by them in 1879 has not sustained any injury from the recent severe weather, and is as sound as when put up. To Messrs. MAIN & Co., Dublin.

MOYLE, CARLOW.

Mr. McClinton Bunbury presents his compliments to Messrs. A. & J. Main & Co., and begs to inform them that the Iron Shed erected by them was not moved at all by the late storm.

SUMMERHILL, KILCOCK.

GENTLEMEN,—In reply to yours of the 9th inst., I have much pleasure in saying that the Hay Barn you erected here for Lord Langford has resisted the late storms most satisfactorily, and stands as secure and firm as when first erected.—Yours truly,

WM. HALL.

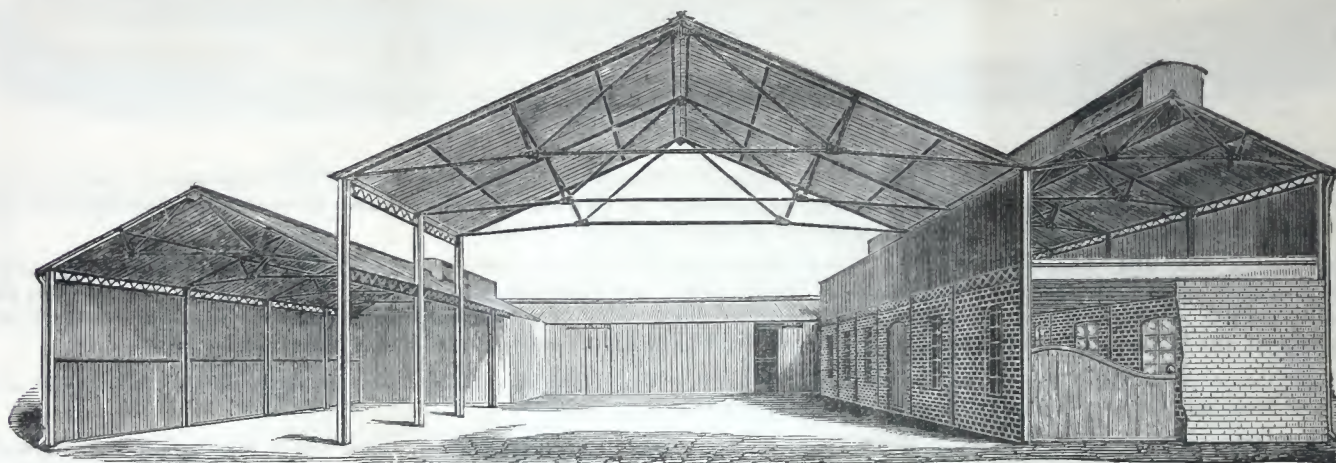
Messrs. A. & J. MAIN & Co.

GALVANIZED IRON ROOFING

AS APPLIED TO FARM-STEADINGS, FOLD-YARD, AND OTHER COVERINGS.

At the Farm-steading, as well as in the Stack-yard, Galvanized Iron Roofing forms a subject of the greatest importance to Agriculturists. It is a well-known fact, that in the feeding of stock important savings are effected by having the cattle kept warm and comfortable during winter, or while being fattened for market. Hence all courts used for feeding purposes are now being covered over; and no material is so useful, convenient, and inexpensive, as Galvanized Sheet-Iron Roofing when properly applied.

As a practical illustration of the advantage of feeding cattle under cover, A. & J. MAIN & Co. can refer to a careful test made by an experienced Agriculturist. A lot of Irish cattle, purchased at one time, was divided for feeding, one portion being placed in a covered court, and the other in an open court. Both lots were fed on precisely the same kinds, quality, and quantities of fodder. The result was that the animals fed in the covered court were sold earlier in the season and fetched a higher price, the net gain being ascertained to be £3 per head. After this test A. & J. MAIN & Co. roofed with Galvanized Iron a court-yard in which the minimum number of 75 animals was to be fed, at a cost, including fittings, of about £250; and thus in one season the extra profit will nearly extinguish the first cost of outlay. It is proper to mention that the district where this test was made was somewhat cold and bleak; but even in circumstances more favourable to open feeding, it clearly proves that where cattle are being fattened, no better investment can be made by Agriculturists than to roof over their open cattle courts; and A. & J. MAIN & Co. with confidence solicit attention to their various forms of Iron Roofing and Shedding, in wide and narrow spans, for covering courts used for feeding purposes.



No. 349.

No. 349 illustrates a complete FARM STEADING, formed chiefly of Iron, which, from its cheapness and other advantages, is now being extensively adopted for such purposes. Several complete Steadings have been constructed and Roofed by A. & J. MAIN & Co., and amongst others they can refer to work of this class done for the Rev. T. P. Marriott-Doddington, Wareham.

The whole structure is carried by A. & J. MAIN & Co.'s Malleable-Iron Columns, securely fixed into concrete. The different buildings can be made partly or wholly of one or two storeys, and of any required width.

The sides can be wholly or partially enclosed with Galvanized Corrugated Sheet-Iron, with or without Wood Lining; but in the formation of the Stables, where warmth and equality of temperature are required, it is recommended that light brick or concrete walls should be built between the Iron Columns.

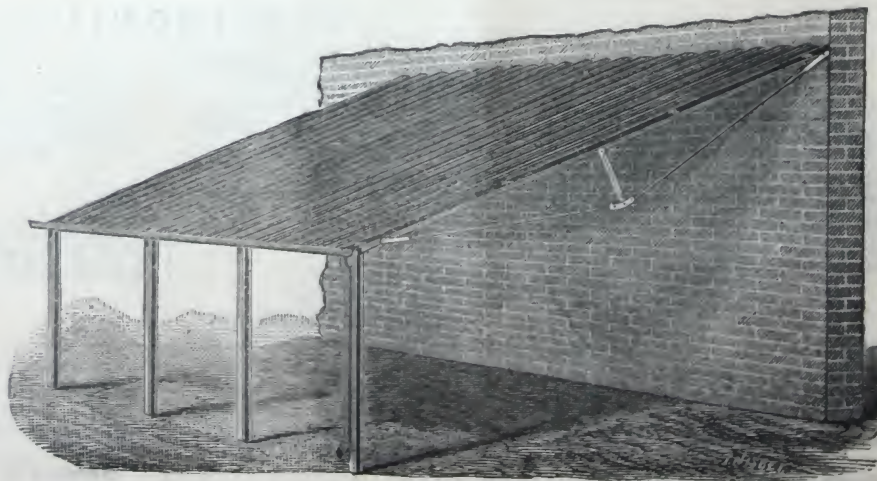
The yard is shewn roofed over; but it can, of course, be constructed with or without this covering.

In asking for Prices for such Buildings it is necessary to furnish A. & J. MAIN & Co. with a rough ground plan of the arrangement proposed, with height and other dimensions, and full particulars of all requirements. In this class of work plans have to be prepared and carefully measured before the cost can be arrived at; and time is required for these necessary preliminaries.

LEAN-TO ROOFING,

For partially covering Fold-yards, Lean-to Roofs, as shewn by Design No. 423, constructed wholly of Iron, are frequently adopted. The columns are of Malleable-Iron, and Tee or Angle-Iron rafters, with purlin-bars, carry the roof. For wide spans "Tension-bars" are applied to the rafters, as shewn in the illustration; and in this way roofs up to about 25 feet can be constructed. For narrow spans tension-bars are not required.

For Testimonials, see pages 12, 13, and 16.



No. 423.

FOLD-YARD COVERINGS—CONTINUED.

In the following Illustrations a few of the many ways in which Iron Roofing can be applied to Fold-Yards are shewn; but it will be understood that there is really no limit to the diversity of arrangements to which it can be adapted. Intending purchasers should forward ground-plans and measurements, with an indication of the design or arrangement that will best suit their requirements, when plans, with prices of the most suitable and most economical form of Iron Roof, will be forwarded.



No. 414.

In this construction of Roof the ends of the Principals are secured by strong Anchor Bolts built *into* the walls without the intervention of Timber Wall Plates; while for the Iron Columns, Eaves Beams of Iron or Wood are required. Galvanized Iron Valley Guttering is provided for the junction of Roofs, with an Angle-Iron Purlin-bar on *each side*, to which, and to the other Purlin-bars in roof the sheets are secured by A. & J. MAIN & Co.'s Iron Clips, as already described.

A large extent of Roofing of this construction, of single and double spans, has been supplied by A. & J. MAIN & Co. during the past season; and amongst many others they can mention the Right Hon. the Earl of Pembroke, Wilton, near Salisbury; the Right Hon. the Earl of Leitrim, Manor Vaughan, Letterkenny; A. C. Tynan, Esq., Whitehall, Clondalkin; Joseph Ricket, Esq., Barham, Hawkhurst; R. Thornton, Esq., Uckfield; and many others in various parts of the country.



No. 368.

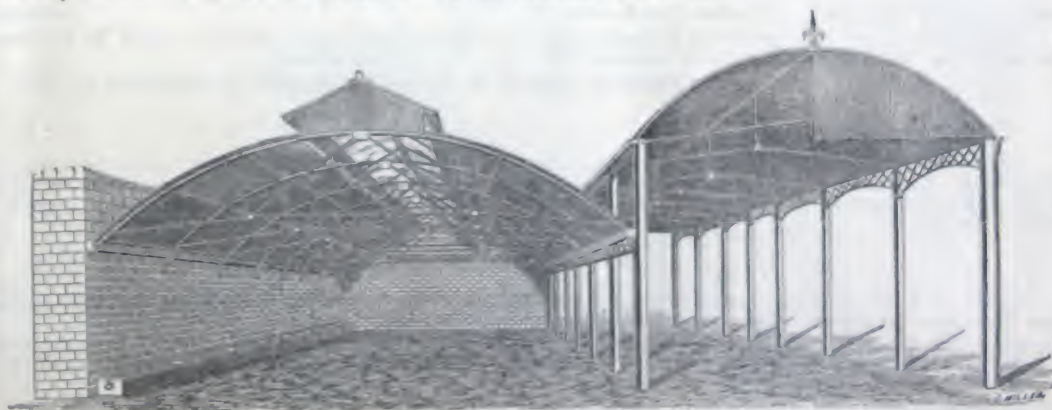
No. 368 shews a Court-yard covered by two RIDGE SHAPED ROOFS. In this case a double range of Iron Columns run up the centre to form a covered way between the Courts, from which the cattle on either side can be fed. In the Roof B a combined Ventilator and Skylight is shewn; while in the Roof A a Curve Ventilator, without Glass, is adopted, and light can be admitted by ranges of Glass in the Roof.

The Roof on the side A rests *upon* the wall, and the side B *against* the wall, and is carried by Iron Brackets; and all inquiries should specify which arrangement is most convenient to adopt, giving the exact measurements *face-to-face* of the walls, their *thickness* and *height*, and if ends are built up the *full height of Roof*, or to *Eaves only*.

Plans, Prices, and Specifications for any dimensions of Roof forwarded on receiving necessary particulars.

No. 367 shews a combined Fold-yard and Hay Barn. In the Fold-yard Roof the Ventilator supports are carried by the iron principals in the roof, and the ridges are glazed, thus forming a combined ventilator and skylight.

On one side is a Hay Shed, the columns of which are utilized to carry the Court Yard Roof; and on the other side it rests *against* the wall of another building, to which the Roof is secured by Iron Brackets, the rain-water being carried off by Boundary Wall Gutters. An extensive range of buildings on this principle was erected by A. & J. MAIN & Co. for Sir Alan Bellingham, Bart., Dunany, County Louth, Ireland.

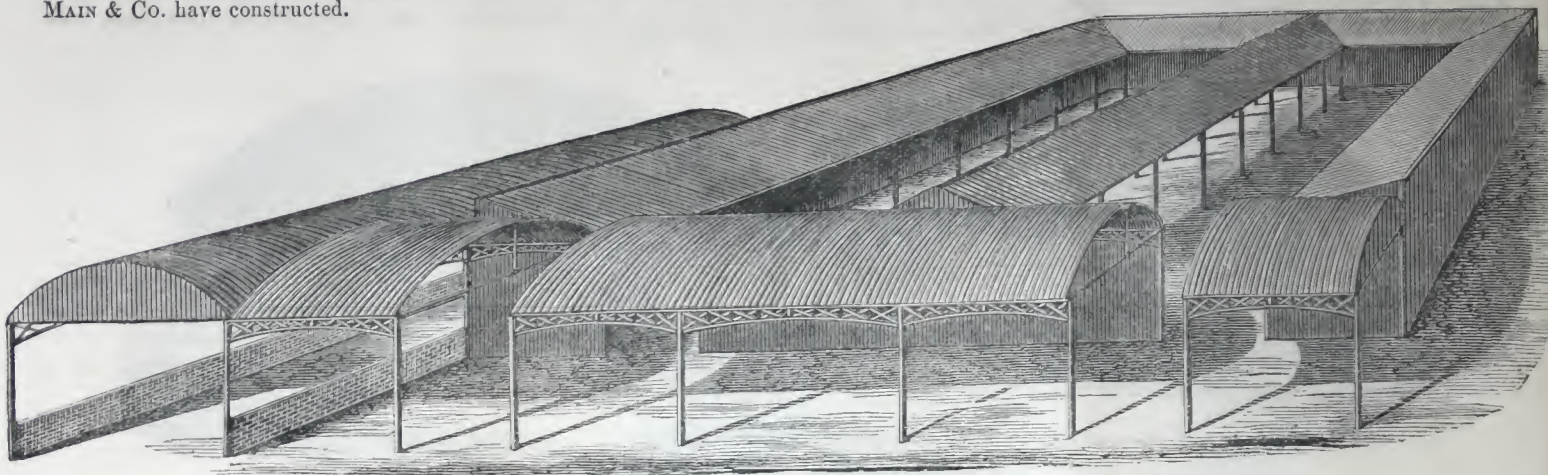


No. 367.

erected by A. & J. MAIN & Co. for Sir Alan Bellingham, Bart., Dunany, County Louth, Ireland.

GALVANIZED IRON CATTLE FEEDING ENCLOSURES.

Cattle Feeding Enclosures are constructed in a great variety of forms to suit any requirements, and the designs here submitted are chiefly to give an idea of the uses to which Galvanized Iron Roofing can be applied, and as specimens of a few of the buildings which A. & J. MAIN & Co. have constructed.



No. 366.

No. 366 shews a most complete set of Sheds and Offices for an arrangement now very frequently adopted. The Court-yards are open, with lean-to Sheds round the Walls, under which the animals feed. There can be any number of Courts made to any required dimensions, and the Walls may be of Galvanized Iron or Masonry as may be preferred.

In front is shewn a range of Offices forming storage for Fodder, Turnips, Feeding Stuffs, &c., while on one side is a Manure Pit, and on the other a Hay Barn can be erected if desired.

In this way a complete and most convenient range of Feeding Sheds and Stores are formed in an economical manner. The Design is here shewn with A. & J. MAIN & Co.'s Iron Columns, Eaves Beams, and Framing, giving permanence and even elegance to the buildings; but of course, if desired, Wood Uprights and Framing can, with equal facility, be adopted.

No. 370 is a combined arrangement for open Court-Yard and Stall Feeding,—a system much recommended by the highest authorities. A low foundation wall of brick or concrete, the height of the Feeding Troughs, is shewn, to keep the manure off the Sheet-Iron; and the sides above this foundation are of Corrugated Galvanized Iron, with Wood lining inside to equalize temperature and strengthen the sides; or the walls may be entirely of Wood boarding or Masonry.

The roof of the Covered Feeding-House is fitted with raised ventilator, light being admitted by side windows, or by movable Louvre Boards (thus dispensing with glass); and in this manner the arrangement is economical as regards cost.



No. 370.

TESTIMONIALS.

Messrs. A. & J. MAIN & Co., Clydesdale Iron Works.

DEAR SIRs,— . . . I must take this opportunity of congratulating you upon the way in which the Steading Roofs stood the extremely severe test of the late gales. The whole work stood the test admirably. . . . —Yours faithfully,

(The Steading referred to in this Testimonial is illustrated on next page.)

INVERNESS, 12 LOMBARD STREET, December 13, 1881.

C. R. MANNERS.

WILTON, January 13, 1883.

GENTLEMEN,—The Iron Roof 118 ft. by 40 ft. single span, erected by your men in 1881, has proved a complete success. The Roof itself is sound and substantial. Your "New Iron Brackets" I consider a great improvement in fastening the Sheets to the Purlins, &c. The Tenant is well satisfied to pay 5 per cent. per annum on the outlay, for the benefit to his Cattle and the Manure, and hopes soon to cover in another section of the Yard.—I remain, yours faithfully,

G. J. CARSE, Clerk of Works to the
RIGHT HON. THE EARL OF PEMBROKE.

OLD CONNA HILL, BRAY.

GENTLEMEN,—In answer to yours, received yesterday, I am glad to inform you that nothing could have resisted the recent severe storms better than the Iron Roofs erected by you. I cannot detect the slightest shake in any part of them.

I certainly felt rather anxious about the Hay Barn during the hurricane we had here on the 8th February, and went out to look at it two or three times; but though the trees were coming down in all directions, the wind did not seem to take the slightest effect on the barn.—Yours faithfully,
Messrs. MAIN & Co., Dublin.

LEWIS RIALI.

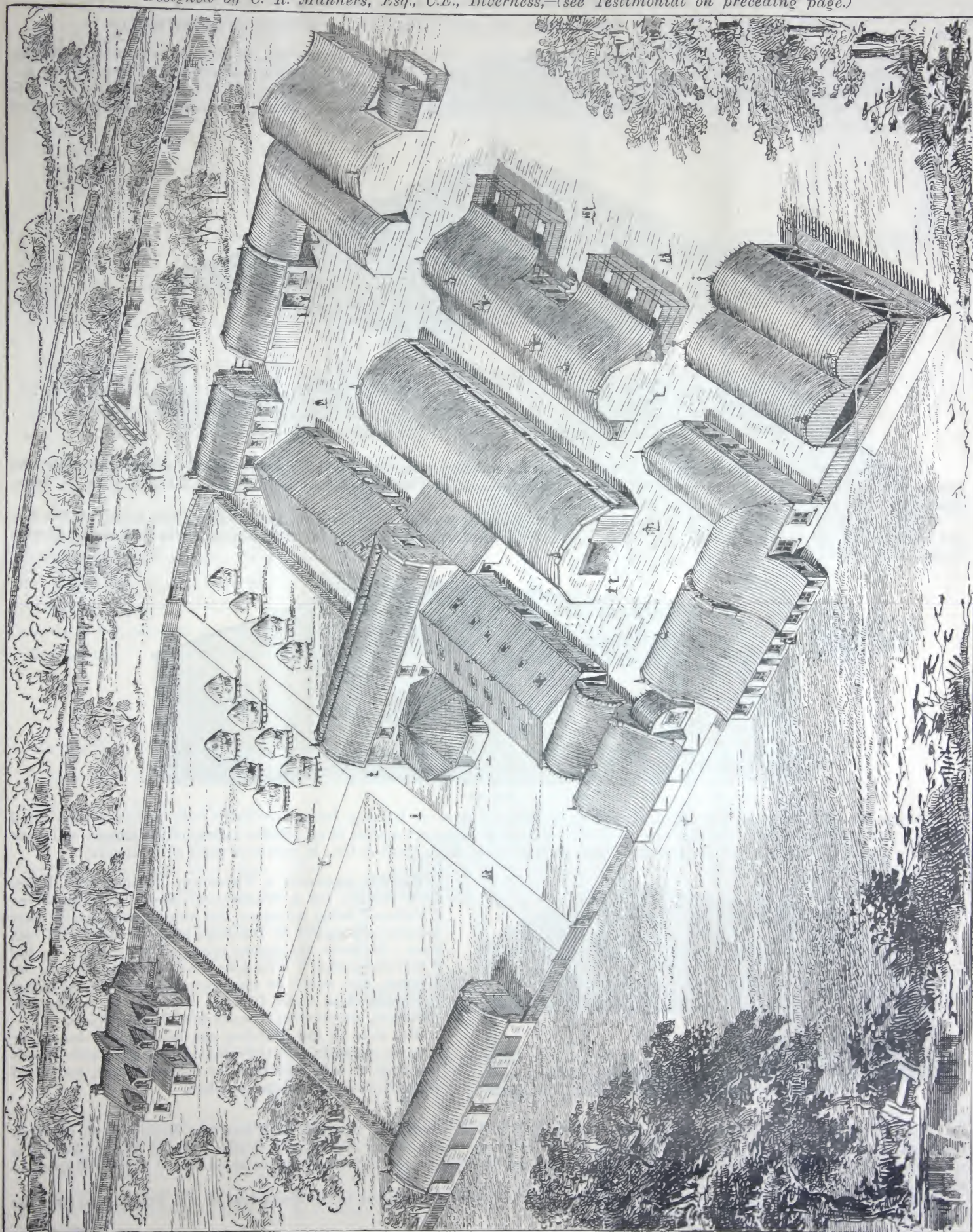
Messrs. MAIN & Co.

SIRs,—In reply to yours of the 9th, in reference to the Iron Roof "Hay Barn," erected by you for the Hon. B. Daly, I beg to say the structure stands on open ground, and was fully exposed to the recent severe storms, which took not the slightest effect upon it.—I am, your obedient Servant,

KILLOUGH CASTLE, THURLES.
B. BULLICK, Land Steward.

VIEW OF FARM STEADING, LECKMELM, ROSS-SHIRE.

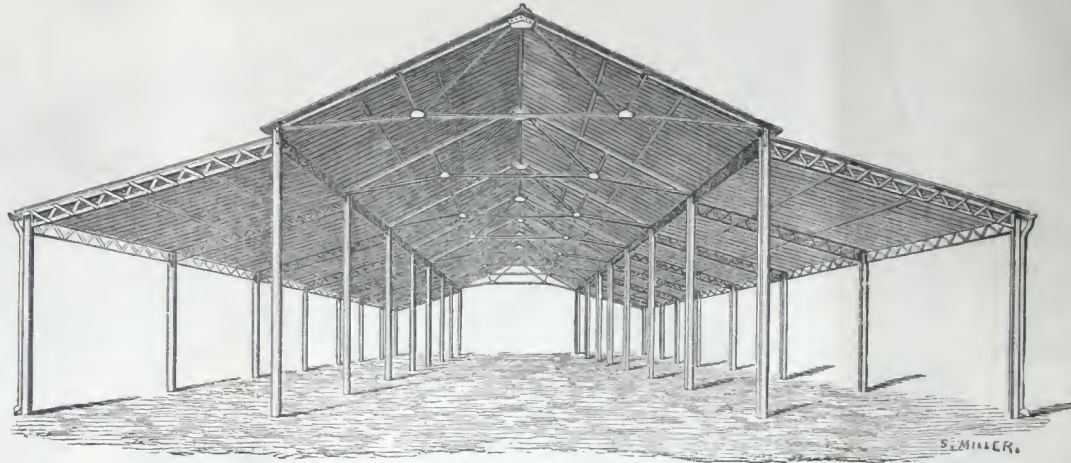
Designed by C. R. Manners, Esq., C.E., Inverness,—(see Testimonial on preceding page.)



GALVANIZED IRON ROOFING,

AS APPLIED TO STORES, WAREHOUSES, &c., FOR HOME AND FOREIGN REQUIREMENTS.

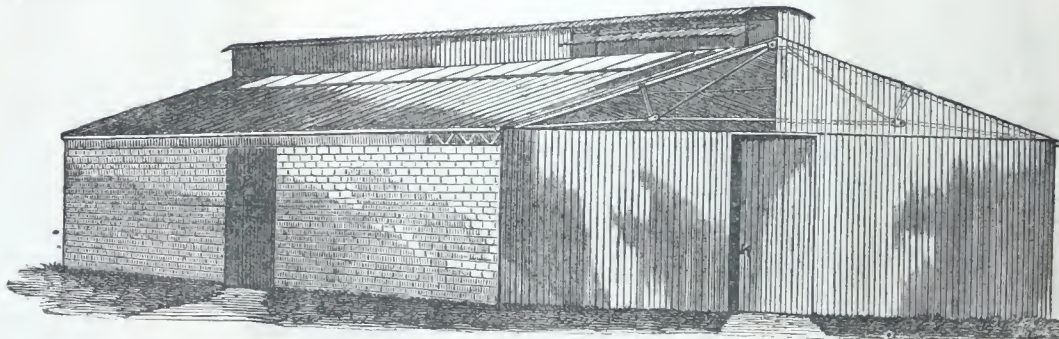
ON this and the following page a few Designs of Iron Buildings suitable for WAREHOUSES, of one or two storeys, STORES, SHEDDING for WHARVES, and a great variety of other purposes are given, and it will be readily understood that Iron Roofing and Shedding can be adapted to any special plan or other requirements. Intending purchasers should forward full particulars with dimensions and rough ground plan of the buildings required, when Plans will be prepared and Specifications and Prices forwarded as quickly as they can be got ready.



No. 335.

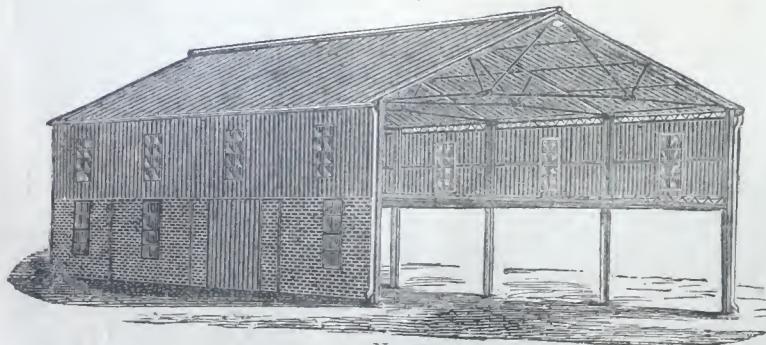
Design No. 335 illustrates an important arrangement for covering wide areas, and is very extensively adopted for home and foreign requirements. The centre Span can be either Ridge-shaped or Curved, and may be 30 feet to 50 feet wide, or more, while the Wings may each be up to about 25 feet wide.

The Wing Roofs being in the form of a "lean-to," no Valley-Guttering is required for the junctions, thus modifying the cost and rendering the building more thoroughly water-tight. Walls are frequently adopted for the outsides, and a floor can be adopted in the centre span if desired.



No. 329.

Design No. 329 shows an Iron Roof applied to an enclosed store or building, having ventilator with moveable sides fitted on Apex, and with Continuous Skylights in the Roof. It is an arrangement applied to an infinite variety of Buildings; and very extensive ranges of this class of Roofing have been erected by A. & J. MAIN & Co., in numerous parts of the country.



No. 351.

No. 351 represents a Two-storey Building with Ridge Roof suitable for a Warehouse. Iron "Principals" or "Rafters" being necessary, this arrangement can be most economically applied to Buildings from 30 feet to 50 feet span. If under the former span, a Curved Roof on the "Self-Supporting" Principle already explained, can be adopted, and would be cheaper. When a second storey is wanted, Iron Cross Girders, with Centre Supports if necessary, are provided to carry the Flooring Joists.

The sides of this Building can be opened if desired, or may be closed in with Galvanized Sheet Iron, with Wood-boarding, or with light brick or concrete walls, and fitted with Doors and Windows complete.

Even when Brick or Concrete Walls are adopted, it is still of advantage, especially in Two-storey Buildings, to use Iron Columns, as thereby the necessary strength can be secured with very much lighter and cheaper Walls; while, if Wood Cleading is considered sufficient, A. & J. MAIN & Co.'s Iron Columns can be prepared for Wood-boarding at no additional expense if specified at time of ordering.

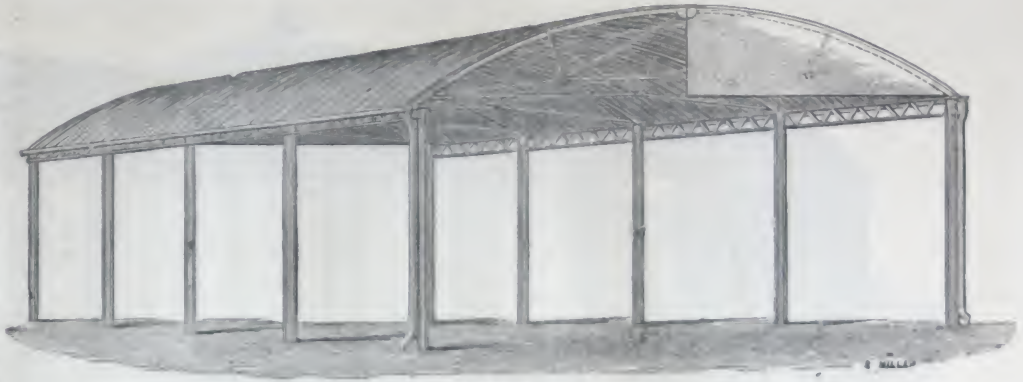
In writing for Prices of two storey buildings, it is necessary, in addition to the dimensions of the Building, to state the weight which the Flooring will be required to carry.

GALVANIZED IRON STORES, WAREHOUSES, &c.—CONTINUED.

In their Trussed Roofs, especially when Curved, A. & J. MAIN & CO. have made various improvements which have tended to modify the cost; and for spans of about 30 feet, a Curved Trussed Roof, with No. 22 Sheets, is now actually cheaper than Self-supporting Roofs when made of the requisite strength; while, of course, the Trussed Roof is stronger and in every way more desirable.

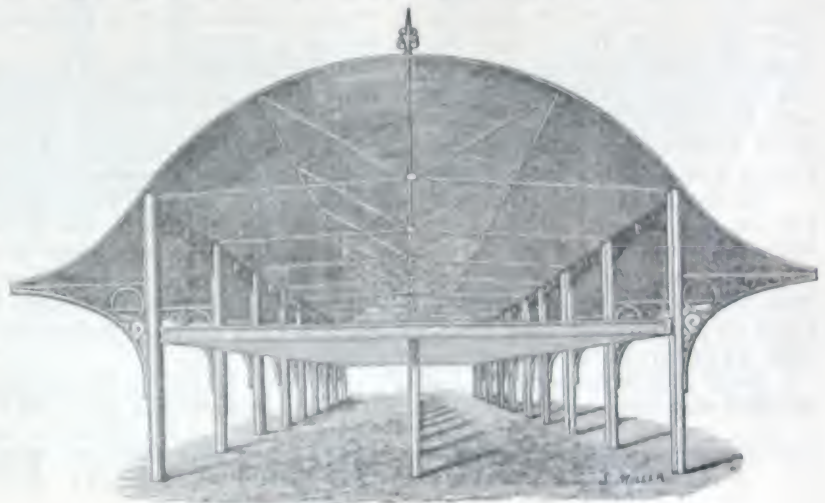
The illustration, No. 333, shews a CURVED TRUSSED ROOF of about 40 feet span, carried by Iron Columns and Eaves Beams, but which can, with equal facility, be applied to walls. This

Shedding is suitable for a variety of purposes, and the cost, 40 feet wide including Columns, may be taken at about 1s. 1d. per square foot of space covered; but it is not possible to quote accurate prices without full dimensions being submitted.



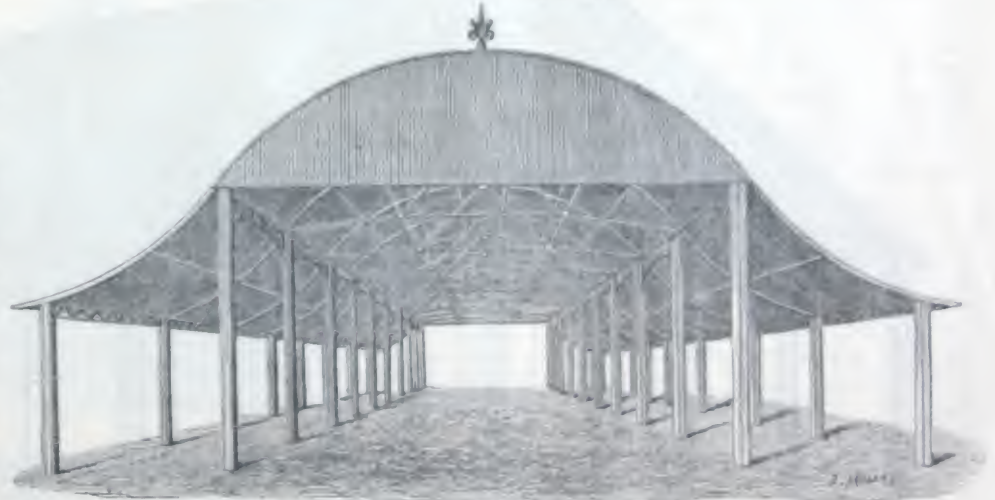
No. 333.

Design No. 357 shews a Store of two storeys, adapted for use upon Tea, Coffee, Tobacco, and other Estates, with overhanging Verandah, about $7\frac{1}{2}$ feet wide, carried by Ornamental Brackets from the Columns. According to the width and the load to be carried, Iron or Timber Cross-beams, with Centre Uprights, are required to support the floor. But it may be remarked that it is of great advantage to adopt Iron Cross-beams and Uprights. The cost of Iron is, in many cases, not much greater than Timber; and when permanence, freedom from fire, and economy in space are taken into account, Iron is, in the end, much more advantageous.



No. 357.

Design No. 356 shews a Curved Roof of wide span in the centre, with Verandah each side of a width up to 15 feet or thereby, and suited for Storing, Loading, Packing, &c., &c. This arrangement is chiefly adapted to Foreign requirements, and can be had with a floor across the central building, as design No. 357, when desired.



No. 356.

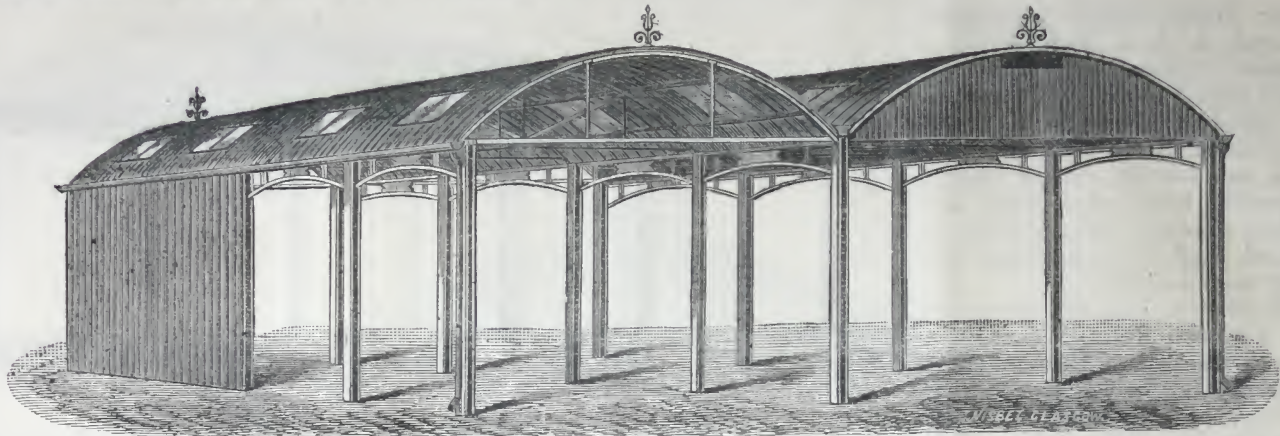
For Directions as to forwarding Measurements, see page 3.

ERECTION OF IRON ROOFING.

A. & J. MAIN & CO. have a staff of thoroughly experienced workmen for the Erection of Iron Roofing, Shedding, and Iron Structures; and they are prepared to Contract for the completion of all such work in any part of Great Britain or Ireland.

In cases Abroad, where the expense of sending workmen specially for that purpose would be too great, the various parts are all carefully marked and numbered for re-erection, and working plans are furnished. The erection is, indeed, a very simple matter, as the different parts are easily handled, and have only to be bolted together, which can readily be done by any intelligent workman. This facility of erection renders A. & J. MAIN & Co.'s Iron Roofing and Shedding specially adapted for all Foreign or Colonial requirements.

GALVANIZED IRON ROOFING FOR MANUFACTURING REQUIREMENTS.



No. 305.

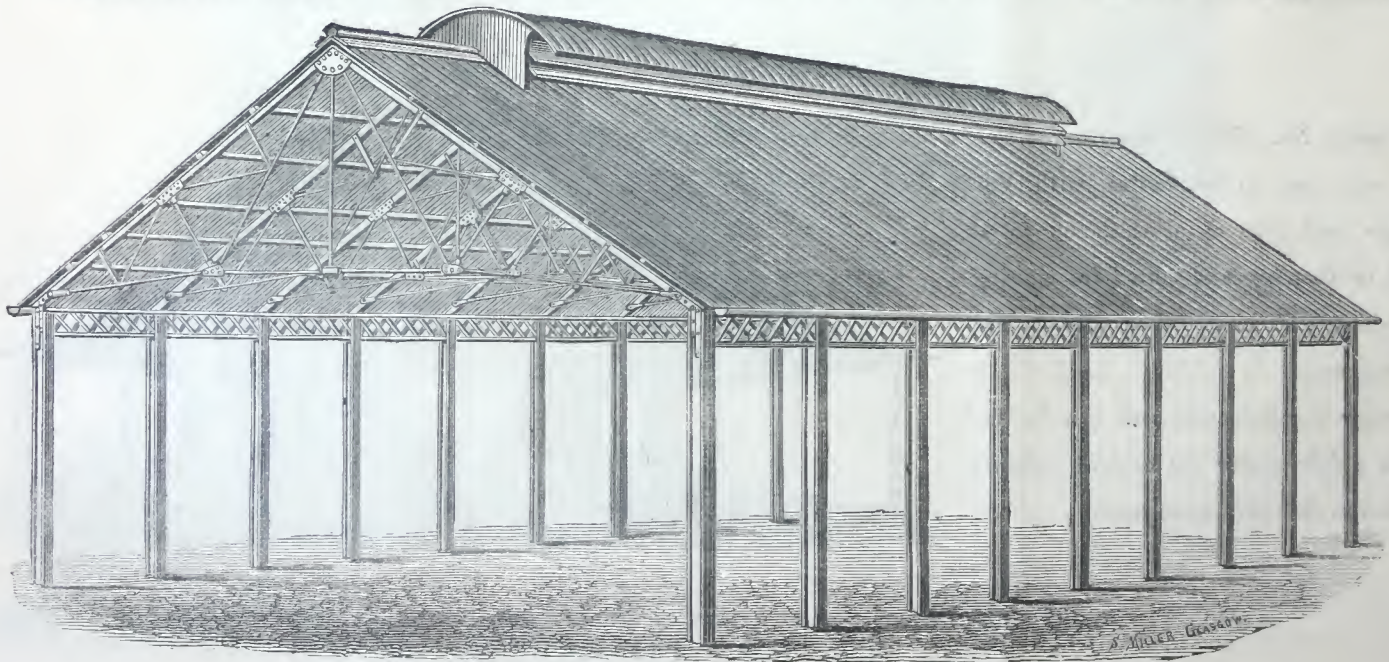
In the illustration No. 305, Curved Iron Roofing is shewn in two Spans; and, obviously, there may be three or any number of Spans. It is adopted in many cases where extensive storing accommodation is required; and likewise for WORKSHOPS, SUGAR REFINERIES, OIL WORKS and PAPER MILLS, TANNERIES, &c.; and A. & J. MAIN & CO. can refer to many such erected by them. The Roofs can be constructed upon the "Self-Supporting" principle when the width of Span is suitable; but for lighting and ventilating, the Trussed arrangement affords greater facilities. The Design shews Roof-lights at intervals, and Iron Columns, with Iron Eaves Beams; but, of course, the Roofs can be applied to Timber Supports or to Walls. The sides and ends can be closed down to ground, with Corrugated Galvanized Sheets fixed to Iron or Timber Framing, as shewn in the Illustration; and Iron or Timber Doors and Windows can readily be fitted into the side cladding.

At the junction of the Roofs, Galvanized Iron Valley Gutters are supplied, properly supported with an Angle-Iron Purlin-Bar on each side, to which, and to the other Purlin-Bars in the Roofs, the Sheets are secured by A. & J. MAIN & CO.'s Wrought-Iron Clips; the whole forming a substantial structure, while the prices are moderate.

For manufacturing purposes, ranges of Shedding in this form have been supplied by A. & J. MAIN & CO. to MESSRS. THE CARTSBURN SUGAR REFINING CO., Greenock; THE ORCHARD SUGAR REFINING CO., Greenock; THE BURNTISLAND OIL CO., Burntisland; THE OVOCA MINING CO., Wicklow; HANDASYDE & CO., Oil Works, Dalkeith; H. H. BEAKBANE, Esq.; THE TANNERY, Stourport; and many others.

Each case requires to be specially considered according to dimensions and other arrangements required; and upon being favoured with these and other necessary particulars, plans and prices will be forwarded.

STRONG IRON BUILDING FOR ENGINEERING PURPOSES.



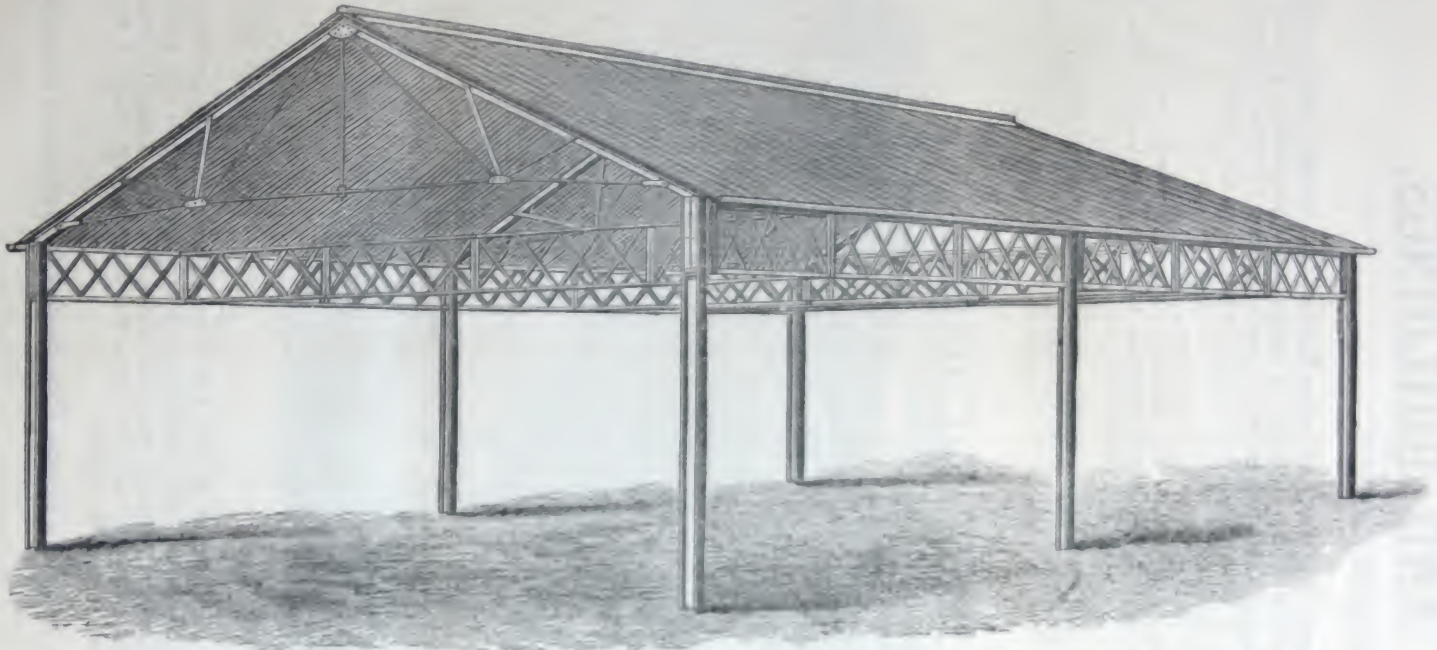
No. 459.

In the design No. 459 is shewn a strong Ridge-Shaped Roof of a wide Span and considerable height, supplied for an Engineering Workshop. Steam Hammers and other Machinery were placed underneath, and the Iron Columns were taken advantage of for the Shafting. For all such purposes Iron Roofing, with A. & J. MAIN & CO.'s Malleable-Iron Columns, can be advantageously adopted.

While, however, the Columns of a Building can be used for carrying Shafting, A. & J. MAIN & CO. only recommend the adoption of this arrangement where *light* Shafting is used. For heavy work it is preferable to construct a separate Iron Platform from which the Shafting and Pulleys are worked.

GALVANIZED IRON BUILDINGS,

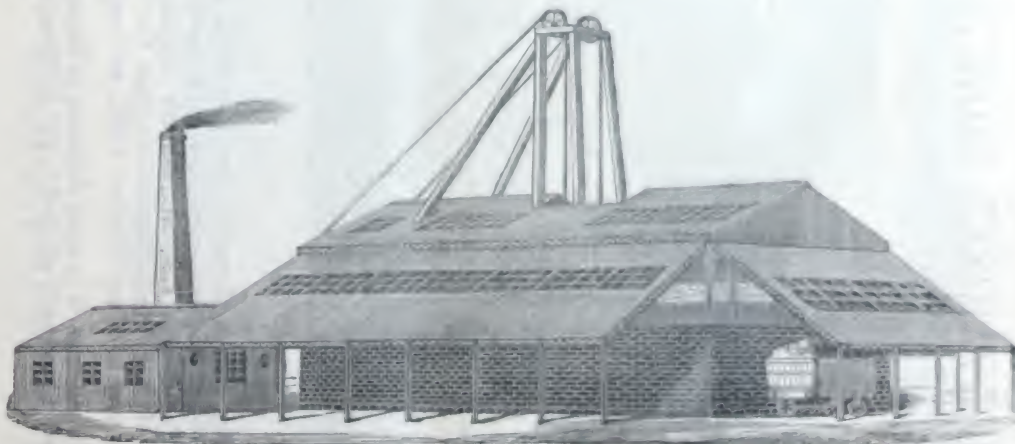
FOR IRON WORKS, SHIPBUILDING YARDS, COLLIERIES, &c., &c.



No. 456.

In the illustration No. 456, a massive Iron Building for an Iron or Steel Work is shewn, as supplied to Hugh Martin, Esq., Dundee Steel Works, Coatbridge, and others. Here also A. & J. MAIN & Co.'s Malleable Iron Columns possess the special advantage of meeting the dimensions required at a considerable saving in cost. The Columns are of a strong and massive section, suitable for wide Spans and for being placed as far as 40 feet apart. The Eaves Girders are of strong Lattice Iron Work, of a depth suitable for Spans of 35 feet to 40 feet, and Cross Girders are shewn across the building for the purpose of working a travelling crane, or for suspending loads of metal during the process of manufacture.

This style of Building is also suitable for SHIP-BUILDING YARDS and other requirements where wide Spans and considerable height are necessary.



No. 348.

Iron Co., Nottingham; The Seaham Colliery, Sunderland; Archd. Hood, Esq., Cardiff, for Rosewell and Ballochmyle Collieries, &c., &c.

No. 348 shows the application of Iron Roofing to Colliery purposes; and A. & J. MAIN & Co. have erected some very extensive works of this kind. The variety of arrangements is endless; and it is therefore necessary, in all applications for Prices, to give *minute information as to plan and measurements*.

Amongst the numerous works of this class supplied and erected by A. & J. MAIN & Co., they can specify Messrs. John Lancaster & Co., The Nantyglo and Blaina Steam Coal Collieries, Blaina; The New Hucknall Colliery Co., Sutton, near Mansfield; The Hetton Coal Co., Millfield, Sunderland; The Bestwood Coal &

TESTIMONIALS.

From THE SCHULTZE GUNPOWDER COMPANY, LIMITED.

EYREWORTH LODGE, LYNDHURST, S.O.,
HANTS, January 4th, 1893.

MESSRS. A. & J. MAIN & Co.,
108 Queen Victoria Street, London, E.C.

GENTLEMEN,—The double-span Workshop you erected for us last year has given us every satisfaction. As I wrote you when it was completed, I was much pleased with the quality of the work put into it, and now I am able to report favourably of its standing the continual jar of heavy machinery without any damage or leak.—Yours truly,

R. W. S. GRIFFITH, *Superintendent*.

From THE NANTYGLO AND BLAINA STEAM COAL COLLIERIES.

BLAINA, 5th November, 1890.

MESSRS. A. & J. MAIN & Co.,
108 Queen Victoria Street, London.

GENTLEMEN,—The Iron Roof that you put over one of our Pit-banks, supported by Rolled Girder Columns and Wrought-Iron Lattice Eaves, more than a year since, has given us every satisfaction. The structure is neat, light, and substantial.—Yours truly,

JOHN LANCASTER & CO.

GALVANIZED IRON ROOFING AND BUILDINGS,

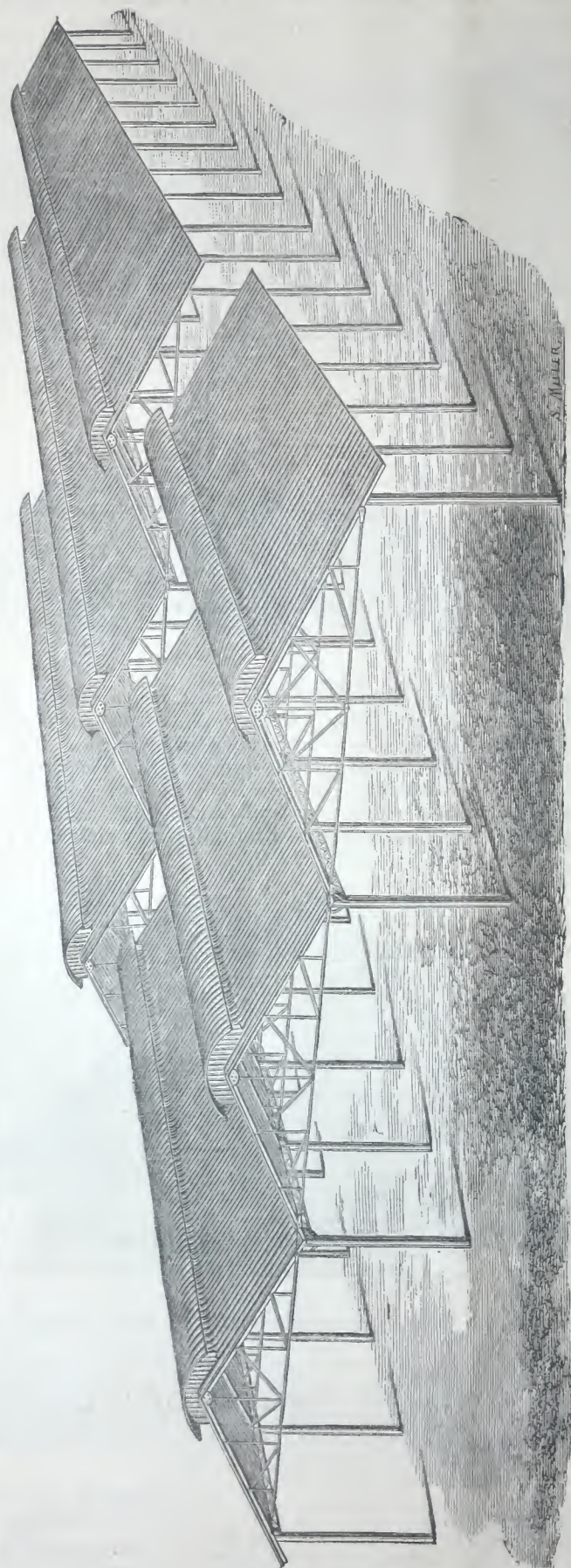
SPECIALLY ADAPTED TO FOREIGN REQUIREMENTS.

For Factories Abroad and in the Colonies, in connection with TEA, COFFEE, SUGAR, INDIGO, COTTON, and other Estates, Iron Roofing and Iron Buildings are of special interest. In India and similar climates generally, timber, from the rapidity with which it is destroyed, is unsuited for permanent Factory Buildings, and IRON STRUCTURES become a necessity. No material is more suited for permanent Buildings of the various kinds required; and A. & J. MAIN & Co. have devoted special attention to this particular department. They have supplied an infinite variety of Iron Roofs and Iron Structures to all parts of the world; and it is only possible to illustrate here a very few specimens of the many extensive Buildings they have constructed.

While Iron Columns are shewn in the subjoined illustrations, it will, of course, be understood that the Roofing can, with equal facility, be applied to Stone, Concrete, or Brick Walls. In many cases the outside Walls are of Brick-work; but usually it is more advantageous to have Iron Columns for the internal supports.

In forwarding inquiries for Plans and Quotations, it should always be shewn where Walls, if any, are to be adopted, with their *height* and *thickness*.

GALVANIZED IRON ROOFING FOR SUGAR FACTORIES.

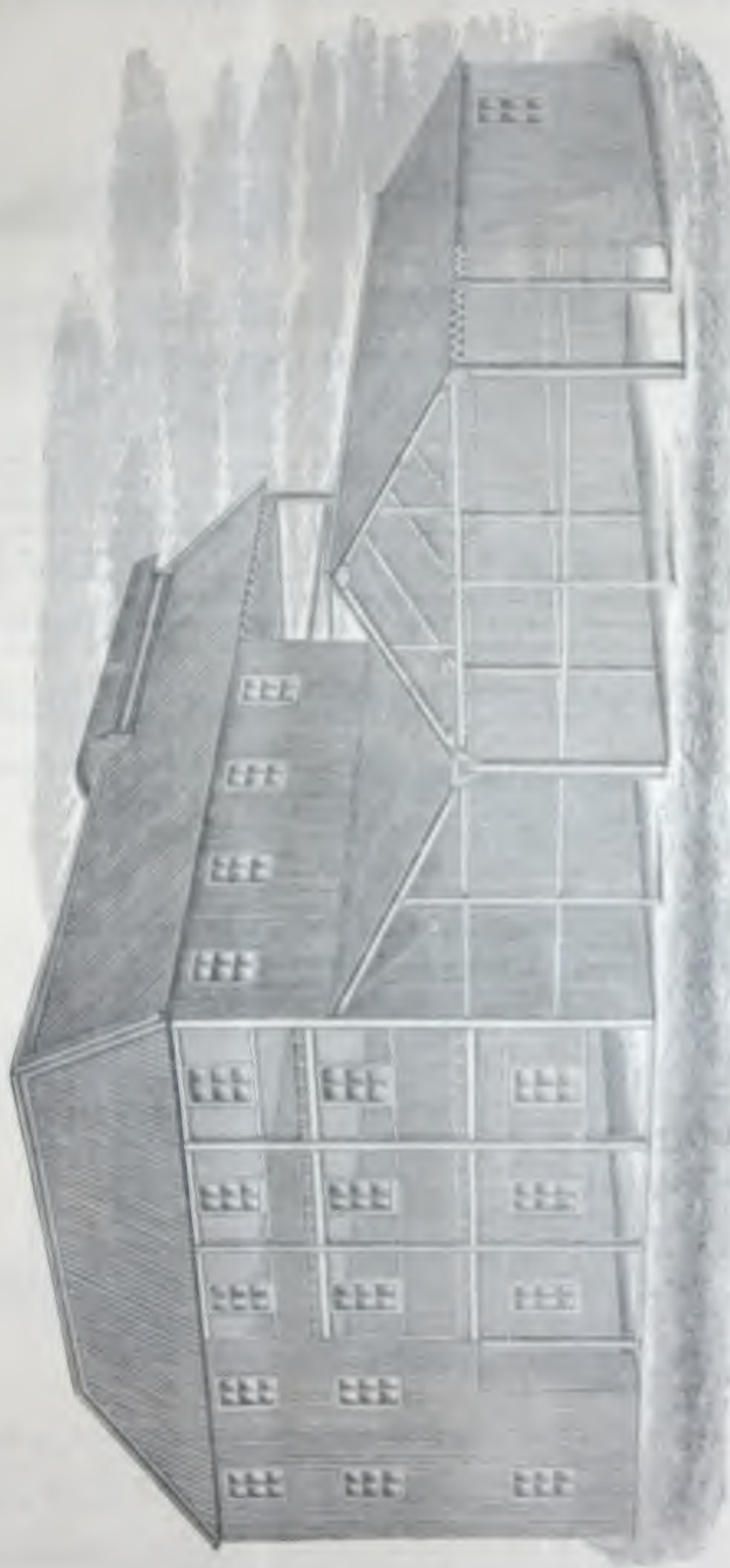


No. 460.

In the above illustration, No. 460, is shewn an extensive Sugar Factory supplied by A. & J. MAIN & Co. for Porto-Plata; and many buildings for Sugar Estates, of varied arrangements to suit requirements, have been constructed for various other countries. The buildings are arranged to suit the positions of the machinery in regard to height and spacing of Columns, and are complete with Engine-house, Boiler-shed, Storage accommodation, &c., &c. Large Galvanized Valley Gutters, supported by Iron Brackets and Purlin-Bars, are supplied for the junctions of the Roofs; but the outside Eaves are overhung by about 2 feet, so as to dispense with Gutters. The Spans may be of any required width, and may be either equal, or varied, as may be desired.

In asking for Prices of such buildings it is most desirable, in forwarding the dimensions, to send also a Ground Plan shewing the positions of the machinery, &c., so that the plan of the buildings may be correctly adapted to the requirements.

GALVANIZED IRON RICE MILL.



No. 428

In the design No. 428 is shown a complete Rice Mill supplied by A. & J. Main & Co. for Bangkok; and it illustrates the somewhat elaborate and complicated arrangements to which Galvanized Sheets and A. & J. Main & Co.'s Iron Columns and Eaten Beams can be adapted. The building was 31 feet in height, with two floors of Iron shafting to carry Machinery, &c., and was complete with Engine and Boiler House, Hack House and Bagging Shed, conveniently arranged around the main building or mill.

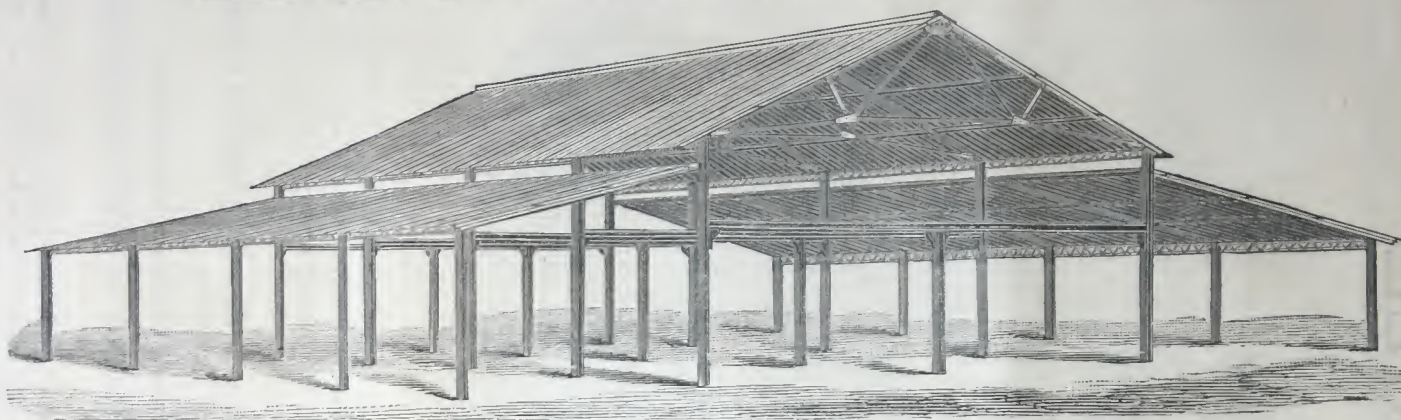
In all buildings of this class it may be noted that A. & J. Main & Co.'s **MALAYAN IRON CONCRETE** effect a considerably saving in the cost as compared with Cast Iron, while in many other respects they are much more convenient, being more easily handled, and lighter and safer for Indian Transport.

The Sides and Ends of the building were enclosed with Galvanized Sheets and Iron Framing, with Windows and Doors, and ample ventilation was provided.

In all such cases it is necessary for purchasers to furnish a Plan of their requirements, with dimensions and all necessary particulars, specifying also the weight which the Floors will require to carry.

For the purposes of **Timber Sawing Mills** also, large Buildings wholly of Iron, have been supplied for Bangkok, fitted with strong Iron staging to carry the shafting. When it is intended that shafting is to be carried by the Iron Columns of a building, engineers should always specify where it is to be placed, and give the weight of shafting to be used, so that Columns of a suitable section and requisite strength may be adopted.

GALVANIZED IRON TEA FACTORIES.



No. 457.

To Iron Structures for Tea Factories special attention has been given, and a few of the chief designs are here submitted.

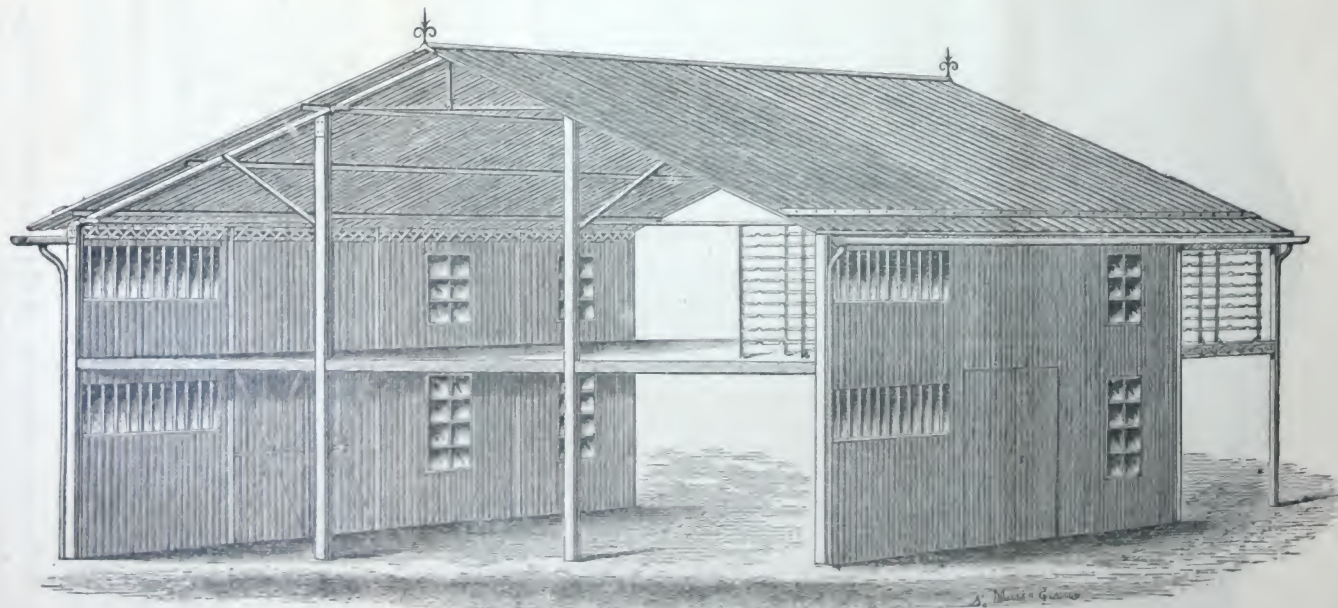
The illustration No. 457 shews a Tea Factory with packing and storing accommodation, many of which have been supplied to Tea Gardens in India. The central portion is usually from 30 feet to 40 feet wide by 16 feet to 18 feet high to eaves. Iron Columns are usually adopted, and Brackets are attached to them for carrying the flooring of the Withering Loft. From the light load to be carried by the flooring, supporting Columns underneath are sometimes dispensed with when the span does not exceed 30 feet; but even at 30 feet span it is desirable to use them; and when this width is exceeded a range of centre Columns, of Timber or Iron, as shewn in the illustration, becomes necessary. It is desirable to have the cross-joists and centre uprights of Iron, as thereby permanence is secured, and the flooring can at any time be renewed with great facility and at a small cost.

The Wings are usually 15 feet wide, carried at the outside Eaves by Iron Columns or Brick Walls, and the Rafters rest upon the Iron Columns of the central building about 15 inches below the Eaves, to admit of ventilation and light; and if desired, arrangements can be made for closing this ventilating space at pleasure.

The structure, as a whole, forms a most complete and commodious Factory at a moderate cost, which averages, including Columns, about 1s. 2d. per square foot of space covered, say 120 feet long by 70 feet wide over all, exclusive of Columns and Joisting for Flooring.

In all their structures sent abroad the various parts are carefully fitted before despatch, and elaborate working plans for re-erection are supplied.

Plans and Prices forwarded on receiving the dimensions and other necessary information.

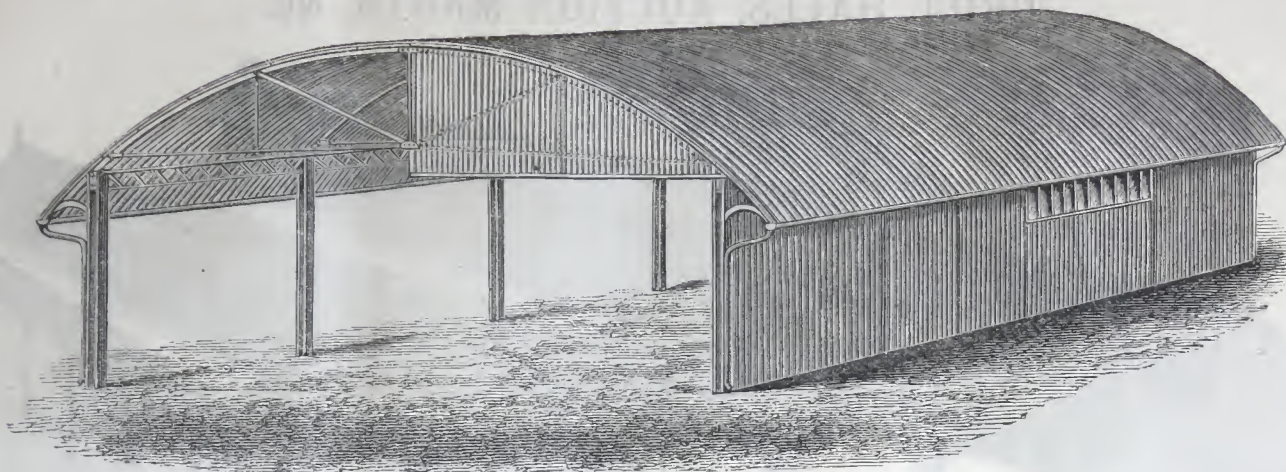


No. 438.

In design No. 438 a somewhat novel arrangement of Tea House is illustrated. It is shewn 40 feet wide, and of two storeys, the upper being for withering operations. The Iron Columns necessary for carrying the flooring are taken advantage of for supporting the roof, and with that object they are prolonged the required height, thus dispensing with Tie-bars and other necessities required in an ordinary roof. This arrangement is, therefore, an economical one, and can be constructed wholly of Iron, or with Timber uprights.

This design is applicable chiefly to Factories of about 40 feet wide, where two storeys and internal uprights are required for withering arrangements. The sides are shewn closed in with Galvanized Sheets, fitted with windows and doors.

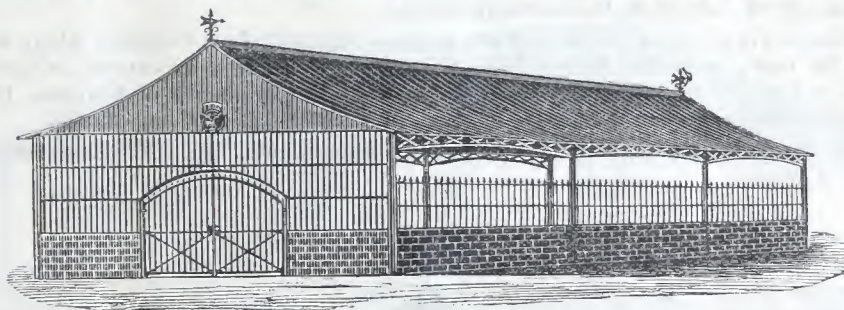
GALVANIZED IRON SHEDDING FOR "GO-DOWNS," &c.



No. 437.

In connection with Factories for Sugar, Rice, Cotton, &c., &c., "Go-Downs" and other storing accommodation are generally required, and the above illustration (No. 437) shews an arrangement frequently adapted. The Roof Sheets are overhung at the Eaves so as to dispense with guttering; but this can be added, when desired, as shewn in the illustration. Continuous side-lights are shewn for windows in cases where the sides are closed in. The Roof can be made Ridge-shaped if preferred, and of one, two, or more Spans as may be desired. For wide Spans especially, Iron Roofing with A. & J. MAIN & Co.'s Malleable Iron Columns will be found very advantageous when their permanence and freedom from repairs are taken into account. The different Spans can be equal or varied in width according to requirements.

GALVANIZED IRON SLAUGHTER-HOUSE.

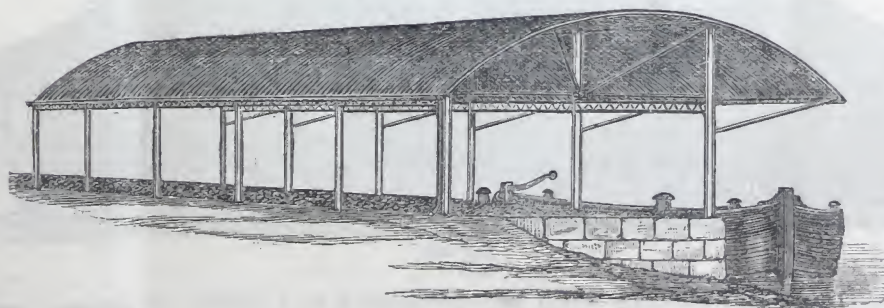


No. 364.

No. 364 is a strong erection to form a Slaughter-House.

The Building is constructed with Iron Columns set into Concrete Foundations, and may be of any length and width required to suit circumstances.

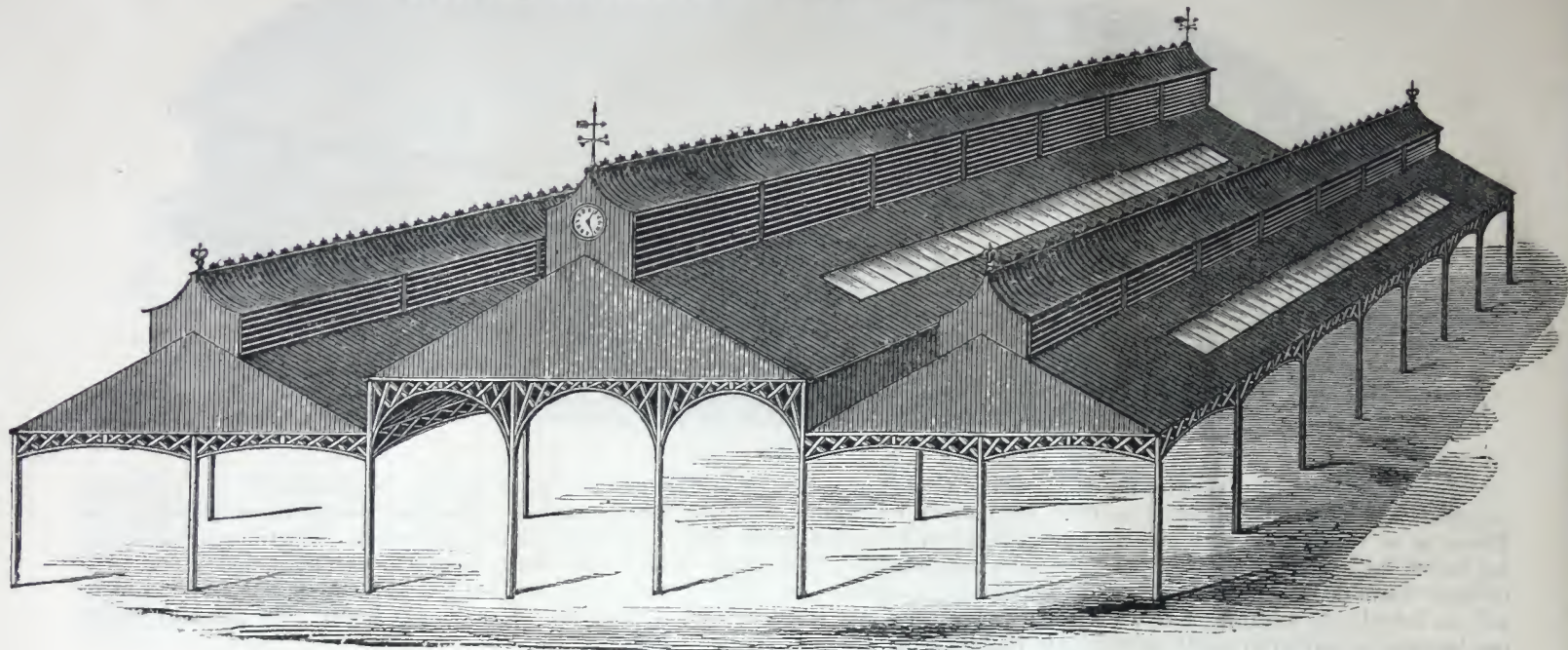
Between the Iron Columns Brick-work is built from 3 ft. to 5 ft. high, upon which again rests strong Wrought-Iron Palisading. The ends are closed in with an Iron Gateway and Grating, the whole forming a structure of great strength.



No. 353.

No. 353 shews the application of an Iron Shed, with overhung side, to a Loading-bank or Wharf; but, for general wharfage purposes, a great variety of other plans are adopted, and have been supplied by A. & J. MAIN & Co. Several of the Designs in the preceding pages have been applied to Wharves, but for any special requirements special Plans will be prepared and Prices quoted upon receiving the necessary information; or Prices will be quoted for the Plans and Specifications prepared by Engineers on these being forwarded to us.

ORNAMENTAL IRON STRUCTURES FOR PUBLIC MARKETS, DRILL HALLS, AUCTION MARTS, &c.

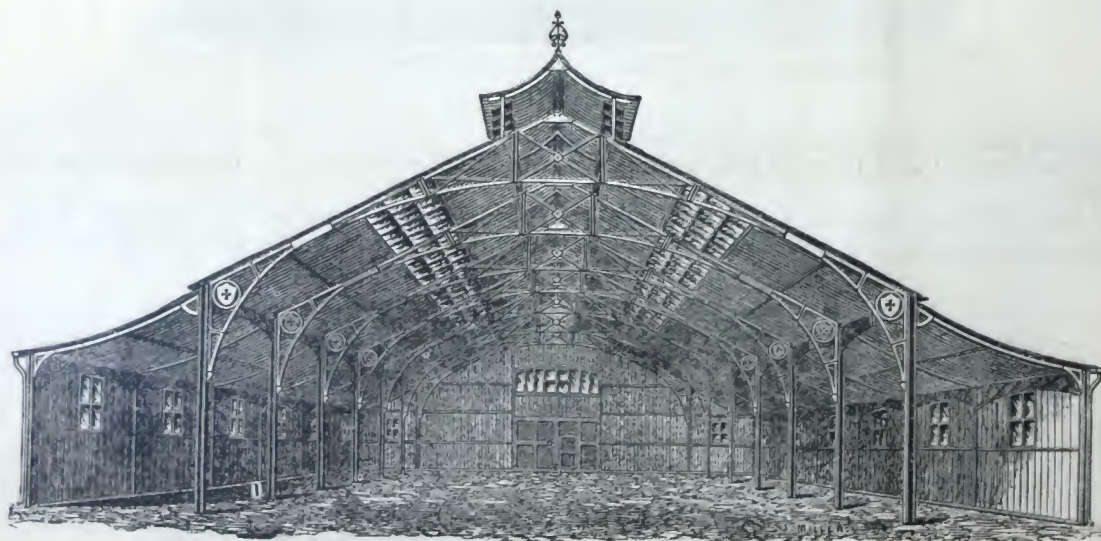


No. 361.

No. 361 is a general Design for a class of Iron Structures of great variety; and A. & J. MAIN & Co.'s system is peculiarly adapted for all such. The Building can be made plain or ornamental, and of any number of spans, with or without verandahs as may be desired, and of any variety of dimensions to suit requirements.

The lightness and consequent cheapness of A. & J. MAIN & Co.'s Malleable-Iron Columns, where so often repeated, as in this case, very materially reduce the cost; while the Arched Eaves Beams give a pleasing appearance to the Building, and, from their great carrying power, enable a large area to be covered with an unusually small number of Columns, thus economizing the price and leaving the space covered *more free from obstructions*,—in most cases a point of great importance.

Light is admitted from the roof, with or without ventilating arrangements; and, of course, the space enclosed can be subdivided in an infinite variety of ways.



No. 362.

No. 362 illustrates an Ornamental Building which may be adapted to a variety of purposes, such as a PUBLIC HALL, VOLUNTEER DRILL HALL, AUCTION MART, &c.; and it can be made with or without the side wings, according to the accommodation required.

The Centre Span is made in this style up to about 40 ft. or 50 ft. span; and the Roof is arched, to give it a somewhat more ornamental character.

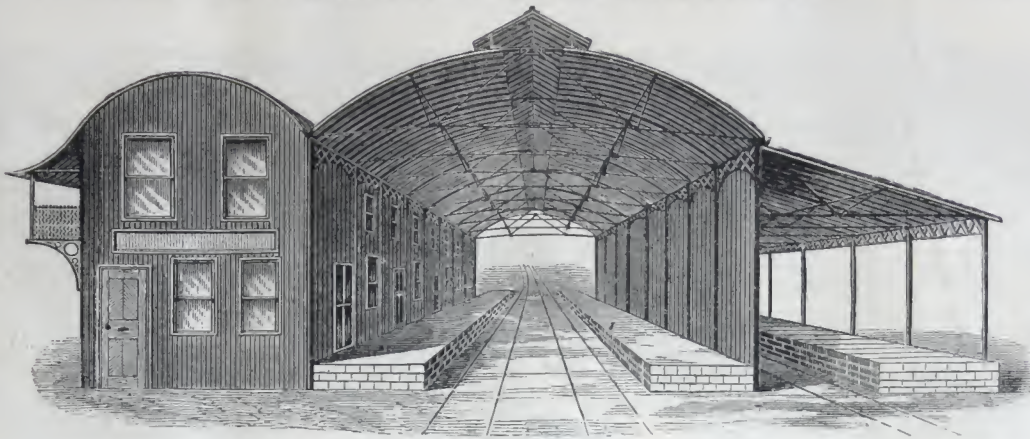
As a DRILL HALL the side wings are partitioned off for Orderly-rooms, Armoury, Stores, &c.

Light is admitted to the Centre Hall by glass in the roof, and to the wings by windows in the sides.

Ventilation is given by means of Louvre-Boards in the raised Ventilator.

GALVANIZED IRON

AS APPLIED TO RAILWAY STATIONS, &c.



No. 363.

No. 363 illustrates the application of Galvanized Iron to Railway Stations, with Dwelling-houses for Station Master and Assistants.

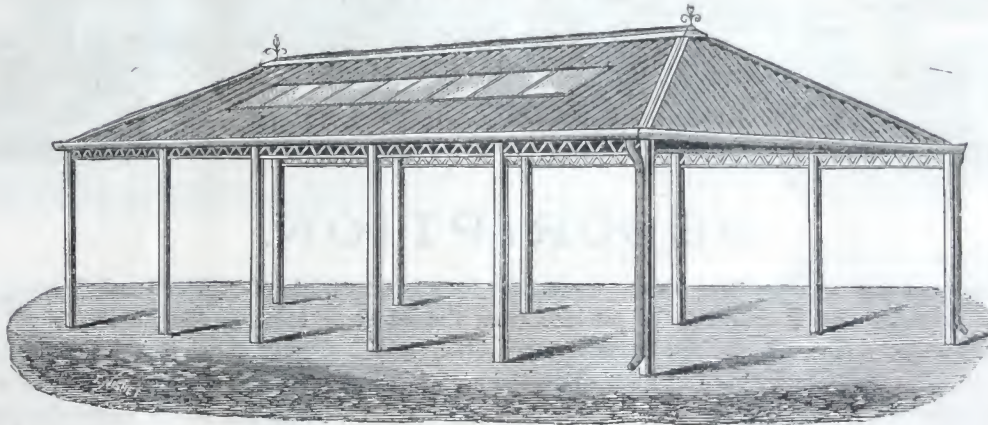
Underneath the Dwelling-houses are Booking Offices, Waiting Rooms, &c. If desired this portion can be built with Booking and other Offices alone; and in that case it is made only one storey in height.

The "Wing" on the side opposite to the Offices forms a Goods Shed. The Centre Span has Ventilator in roof to allow escape of steam and smoke.

Inquiries for Prices must state length and width, and full particulars of accommodation.

GALVANIZED TRUSSED ROOF—Ridge Shaped,

WITH PAVILION ENDS.



No. 422.

This is a more expensive class of Roofing than either the Ordinary Ridge Shaped or Curved arrangements, but for positions where appearance is of importance it is largely adopted. It is, of course, understood that *all* Ridge Shaped Roofs are constructed with Iron Principals. In all large spans the Principals are formed of Tee Iron, and, with the Tie Bars, vary in strength according to width of span. Angle Iron Purlin Bars are then placed at the joinings of the sheets, to which they are secured by A. & J. MAIN & Co.'s Wrought Iron Clips. Tee Iron Rafters with Ties are also used for the Pavilion Ends, and Galvanized Iron Coverings are used for the Pields.

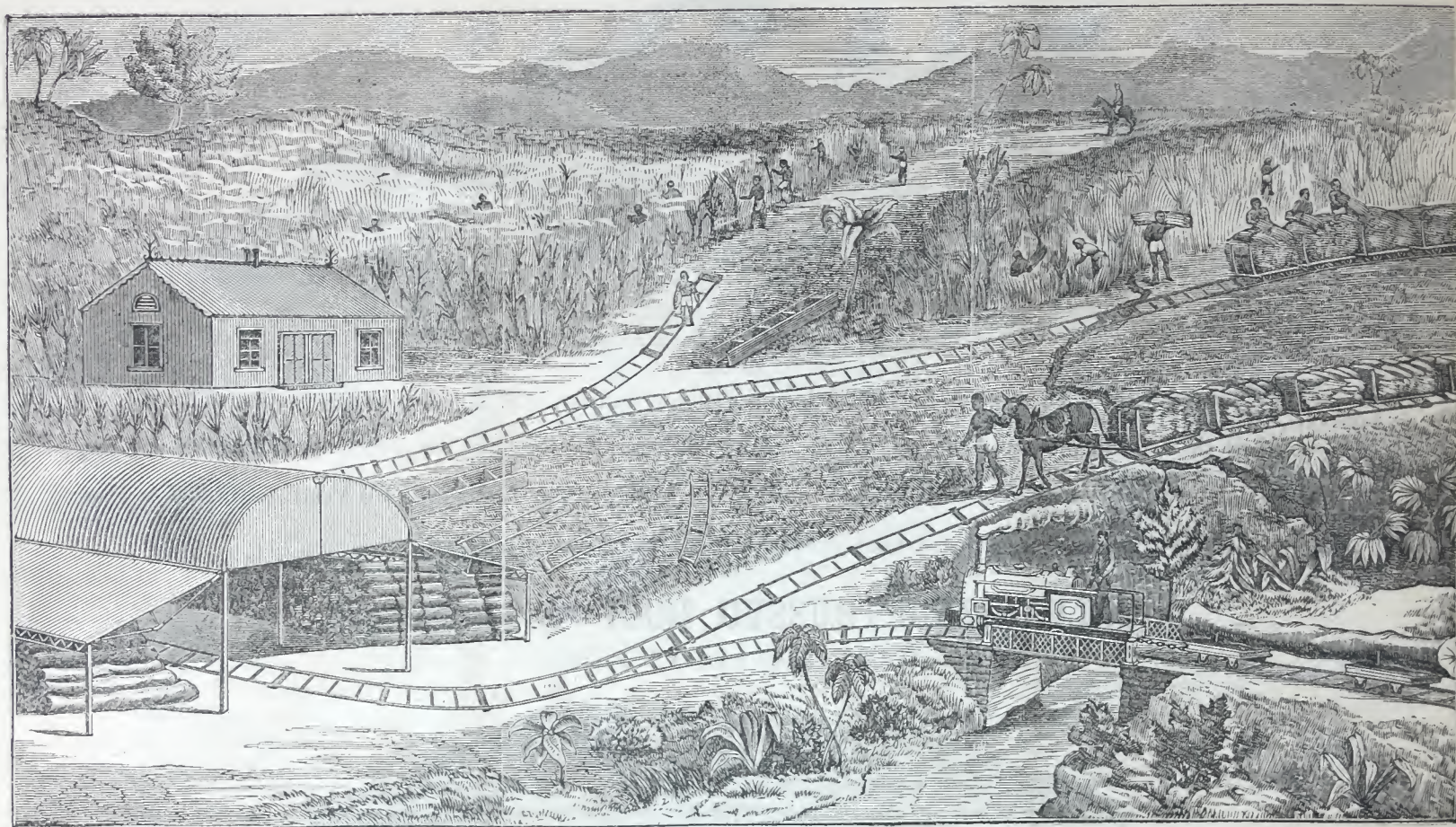
A continuous range of Glass is shewn in the roof admitting light, and a Ventilator can be added at the apex if desired. This arrangement is equally applicable where walls are built, as well as to Iron Columns as shewn in the illustration.

IRON AND SLATED ROOFING.

For some purposes it is desired to cover the roof with Slates instead of Galvanized Sheets; and as such roofs are usually of wide spans, Iron Principals can be advantageously adopted. For Slating, the roof is, of course, always Ridge-shaped; and, to form a Fire-proof roof, Tee Iron Principals and Tie Bars are adopted in the usual manner, but the Angle Iron Purlin Bars are placed about 10½ inches apart, and the Slates are then tied to the Purlins by Copper Wire. Another plan, and the least expensive, is to adopt Timber Purlin Bars, to which "Sarking" is nailed, and the Slates are then nailed upon it in the usual manner. This latter arrangement is not, of course, Fire-proof.

PLANS, with full **SPECIFICATIONS** and **PRICES**, will be forwarded as quickly as possible after receipt of the necessary information. But as Prices in general cannot be quoted without the preparation of Plans and their careful measurement, time must be allowed for these necessary preliminaries. In all cases, however, the most prompt attention which circumstances permit will be given to all inquiries.

PATENT PORTABLE STEEL RAILWAYS.



DESCRIPTION.

RAILWAYS, in a form more or less portable, have become a necessity for a great variety of Agricultural, Mining, and Manufacturing purposes at home and abroad. The transmission of produce from the Field or Mine to the Factory or Store forms an item of considerable cost in most undertakings, and the cost becomes more serious as the distance to which the article has to be transported increases. The work is generally done by carting, and entails the use of one or more animals to each cart or wagon; and it will at once be seen that a system which, with no great outlay, enables one animal to take five or six times the quantity it could do by carting, in less time and with greater ease, must possess most important elements of economy.

Portable Railways possess the qualifications required to meet these conditions and to effect this economy.

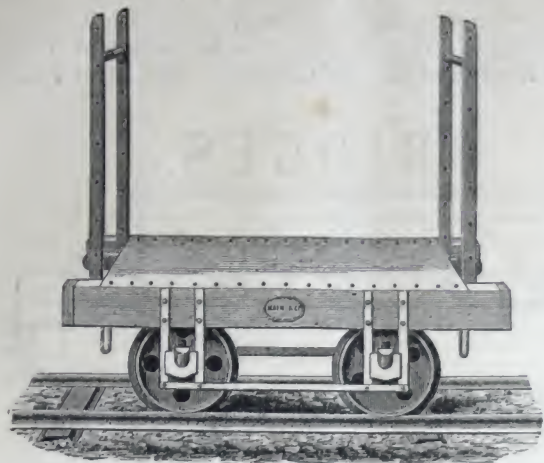
By a "Portable Railway" is meant a combination of rails and sleepers made up in sections of convenient length and weight, to be easily handled, removed, and re-laid by one or two men, and for which no "Permanent Way" or special preparation is required. Combined with these there must necessarily be thorough durability, adaptability to various circumstances and conditions, and economy in first cost.

It may be taken that the cost of a Portable Railway is not greater than that of making a good road for carting, while it costs little or nothing for maintenance; and, unlike a road, it can be extended, removed, and re-laid for breaking up new ground as often as desired and at very little expense. The rails and fastenings being of steel, its durability is beyond doubt; further, as the rails possess the requisite strength for safely bridging over moderately undulating ground, special leveling, or road-making, is not required; and one animal can draw, on an average, six full trucks at a time, carrying from 20 to 30 hundredweight each, according to the nature of the material and the road.

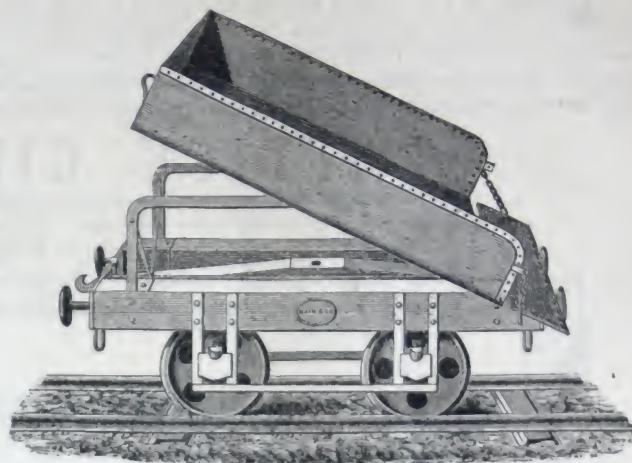
It can thus be affirmed that a good system of Portable Railway is moderate in first cost; costs greatly less for maintenance than ordinary roads; is much more convenient for the transport of produce; and, being more economical in working, it materially reduces the daily oncost of an Estate, Mine, or other undertaking.

A. & J. MAIN & Co. confidently affirm that the system adopted by them meets these and other special requirements in an eminent degree; and they therefore solicit the careful consideration of the subjoined descriptive details of their arrangements.

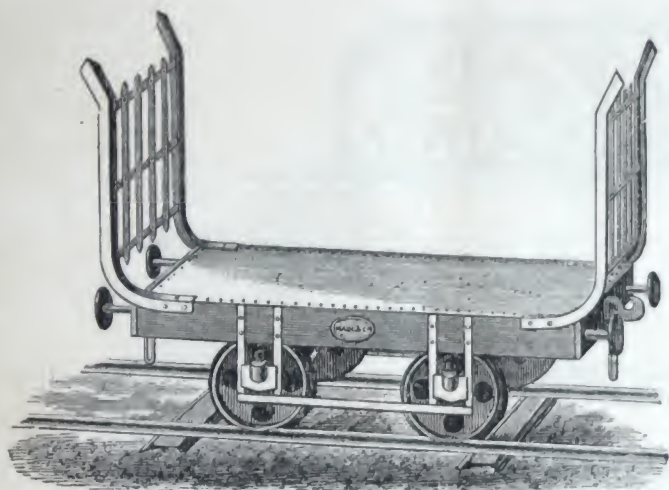
ROLLING STOCK.



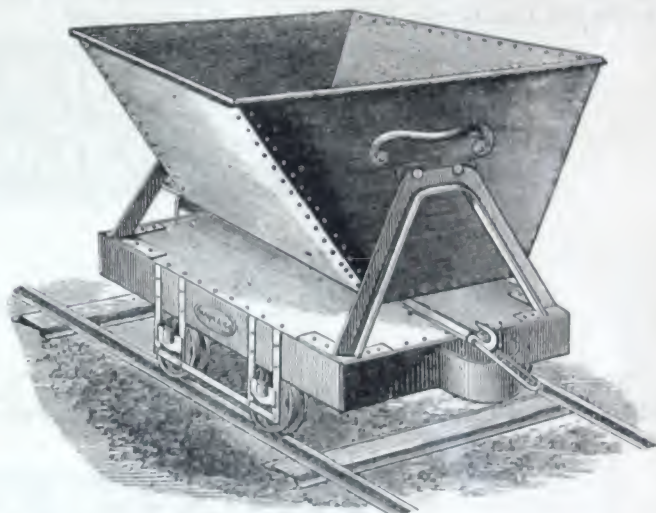
No. 2.



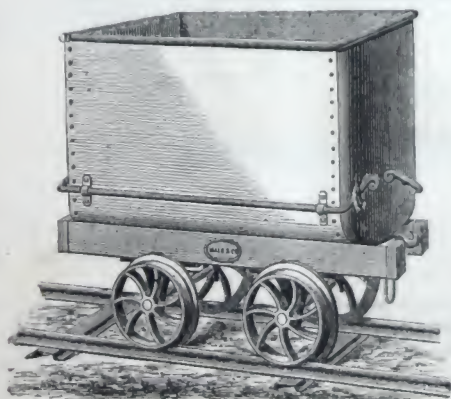
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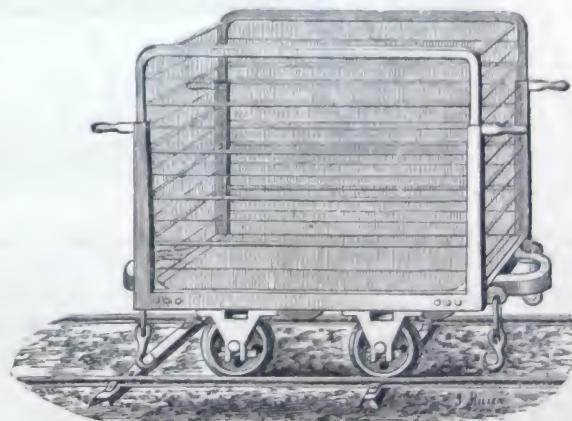
No. 3.



No. 6.



No. 4.



No. 7.

A. & J. M. & Co. construct Wagons for use on Portable Railways, to suit various purposes, and the different classes of material to be carried. A few of the most common are illustrated above. No. 7 shews a Bogie for general purposes, which can be fitted with wire baskets for the conveyance of loose materials and packages such as are required in tea gardens.

| | 16" Gauge. | 20" Gauge. | 24" Gauge. | | 16" Gauge. | 20" Gauge. | 24" Gauge. |
|--------|------------|------------|------------|--------|------------|------------|------------|
| No. 1, | £7 10 0 | £7 15 0 | £8 0 0 | No. 4, | £8 10 0 | £8 15 0 | £9 0 0 |
| " 2, | 8 0 0 | 8 5 0 | 8 10 0 | " 5, | 10 10 0 | 10 15 0 | 11 0 0 |
| " 3, | 9 0 0 | 9 5 0 | 9 10 0 | " 6, | 10 0 0 | 10 5 0 | 10 10 0 |

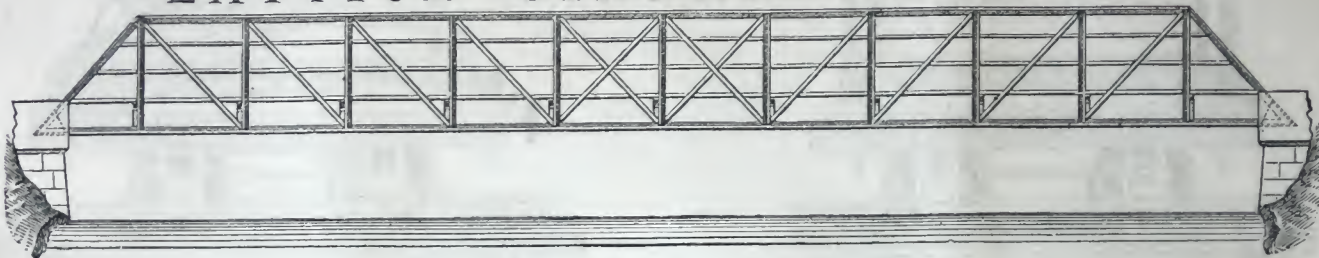
No. 7, without Basket, 16" Gauge, £8 10s.; 20" Gauge, £8 15s.; 24" Gauge, £9.

| | | | | | |
|---|-----|-----|-----|-----|----------|
| Wire Baskets for No. 7 Bogie, 3' 9" long x 2' 9" deep x 2' 0" wide, | ... | ... | ... | ... | £3 each. |
| Brakes and Brake-gear, | ... | ... | ... | ... | 25s. " |

IRON BRIDGES.

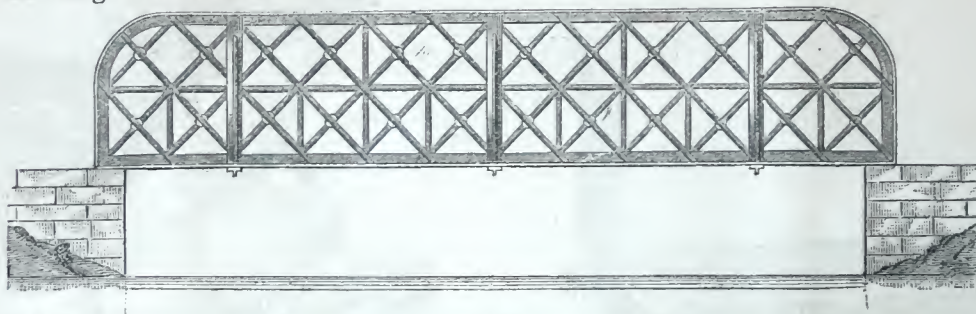
A. & J. MAIN & Co. devote special attention to this department of their business. They can refer to numerous specimens of their work; and are prepared to submit Designs and Estimates for Plain or Ornamental Iron Bridges, suitable for either Foot-Passenger or Carriage Traffic, and constructed upon the most approved principles. The Roadway can be formed of Timber laid upon the transverse beams; or Iron Buckle-Plates can be adopted, and the Roadway formed of Concrete. The latter arrangement is the most expensive, but for heavy carriage traffic it is often preferred.

LATTICE GIRDER BRIDGES.



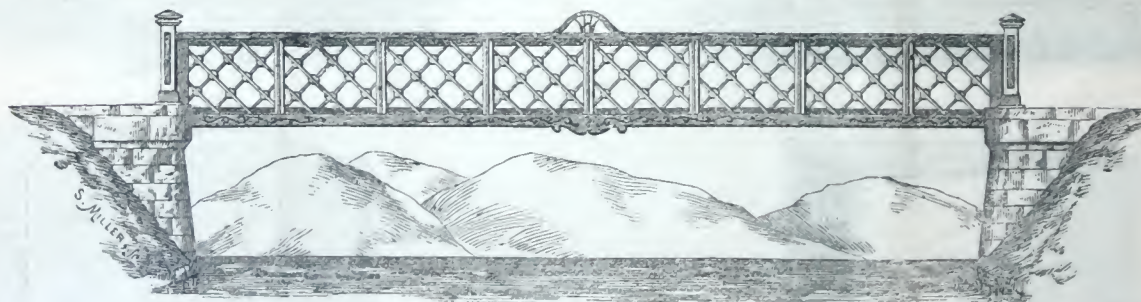
No. 369.

No. 369 illustrates a new principle of Lattice Bridge which is now being very frequently adopted where a simple and inexpensive structure is required. It is adapted for Foot-Passenger or Carriage Traffic up to spans of about 50 feet, and is perhaps the cheapest Iron Girder Bridge that can be constructed.



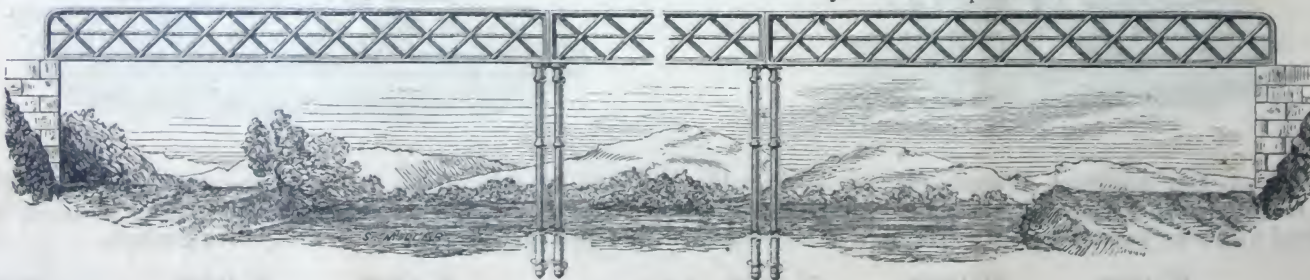
No. 418.

The design No. 418 illustrates another form of a neat Lattice Girder Bridge, suitable for spans up to about 25 feet. It is well adapted for Private Policies or Public Parks, for Passengers or Carriages, where heavy traffic is not to be accommodated.



No. 306.

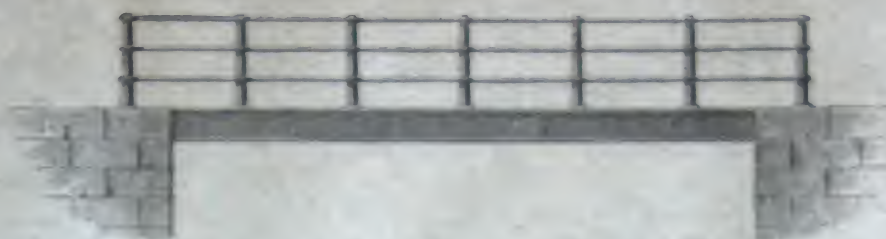
No. 306.—This design represents the most ordinary form of the Lattice Girder Bridge, suitable either for Foot-Passenger or Carriage Traffic, and can be economically worked in spans up to 60 or 70 feet. The plain appearance of the Lattice can be relieved by Washers being placed at the crossings, as shewn in illustration, or Rosettes may be used if preferred.



No. 344.

No. 344.—This illustration shews a Lattice Girder Bridge of a wide span, carried by Cast-Iron Screw Piles fixed in the bed of the river. The Bridge may be carried out to any required length, the individual spans being from 50 to 60 feet each. The cost of Iron Piles is very much less than stone piers; and where circumstances are suitable, it will be found a most economical arrangement; but the bed of the river must be free from Rock and Boulders, otherwise great expense in sinking may be incurred. Several Bridges of this description have been erected by A. & J. MAIN & Co.; and it will frequently be found very suitable for Foreign requirements.

IRON BRIDGE FOR LIGHT TRAFFIC.



No. 345.

THIS is a simple and inexpensive form of Bridge for short spans, say up to 25 feet, and light traffic. The sides are formed of Rolled Iron Girders, of a strength to suit the span and load to be carried. When the width of the Bridge does not exceed about 8 feet, the roadway is carried by strong Corrugated Iron Sheets, covered with concrete or other approved material, and forms a very cheap Bridge for Carriage Traffic, where the loads do not exceed about 2 tons. In this form it is largely adopted in India and elsewhere. The side-rail can be of Iron as shown, or Timber side-rails can be easily applied when preferred.

The following rates will serve to give an indication of the usual prices:—

| | |
|---|----------|
| Bridge 15 feet span by 8 feet wide, without Iron side-rails, suitable for light Carriage Traffic of about 2 tons distributed, | £10 15 0 |
| " 20 " " " " " " " " | 16 10 0 |
| " 25 " " " " " " " " | 21 15 0 |

In writing for Plans and Prices for Bridges, it is necessary to state the Span and Width, the Weight of Traffic to be accommodated, and whether for Timber or Concrete Roadway.

IRON AND WIRE TEA-TRAY RACKS.



No. 451.

THIS is a very simple and serviceable Rack for Tea-trays, and has been successfully used on several Plantations. A Rack consists of two rows of Wires and Standards placed parallel to each other, at a distance to suit the width of the Trays; while the length and height varies according to the space at disposal. A Row consists of No. 10 Galvanized Wires, placed about 3 inches apart, and supported by Flat-iron uprights, usually placed about 12 feet apart, prepared at first for fixing to the floor; while at the top they can be arranged for fixing to the Tie-bars of the Roof; but when this cannot be carried out, stiffeners are fixed between the Flat-iron uprights across the Rack, so as to give sufficient rigidity. At each end of each row there is a strong T Iron upright prepared for fixing to the floor, to one of which the Wires are tied, and to the other "End-stiffeners" are fixed, so as to allow the Wires being tightened.

As the price of each Rack depends upon its length and height, the prices of each article required to form a Rack are given below, so that the total cost can easily be ascertained.

The prices given for the Flat-iron Uprights include either the fastenings at top for Tie-rods, or the Stiffeners referred to above.

PRICES—Delivered in Glasgow.

| | 3 Feet. | 4 Feet. | 7 Feet high from floor to top line. |
|-------------------------------|---------|---------|-------------------------------------|
| FLAT-IRON UPRIGHTS, painted, | 1/11 | 2 | 2/1 each. |
| T IRON END, | 12/6 | 13/3 | 14/ " |
| RAIDERS, galvanized, | - | - | 3/ per dozen. |
| NO. 10 IRON WIRE, galvanized, | - | - | 2/7 per 100 yards. |

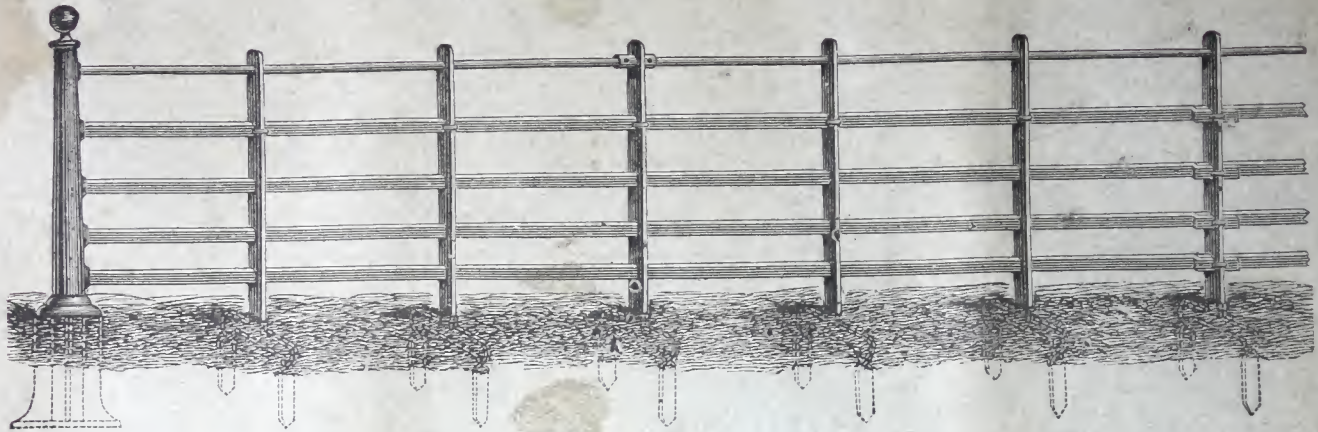
Note.—In ordering, it is necessary to state whether the Flat-iron Uprights are intended to be fixed to the Tie-rods of Roof or not; and, if to the Tie-rods, the height of same from the floor. The width of the Trays is also necessary.

IRON AND WIRE FENCING. ENTRANCE GATES AND RAILINGS.

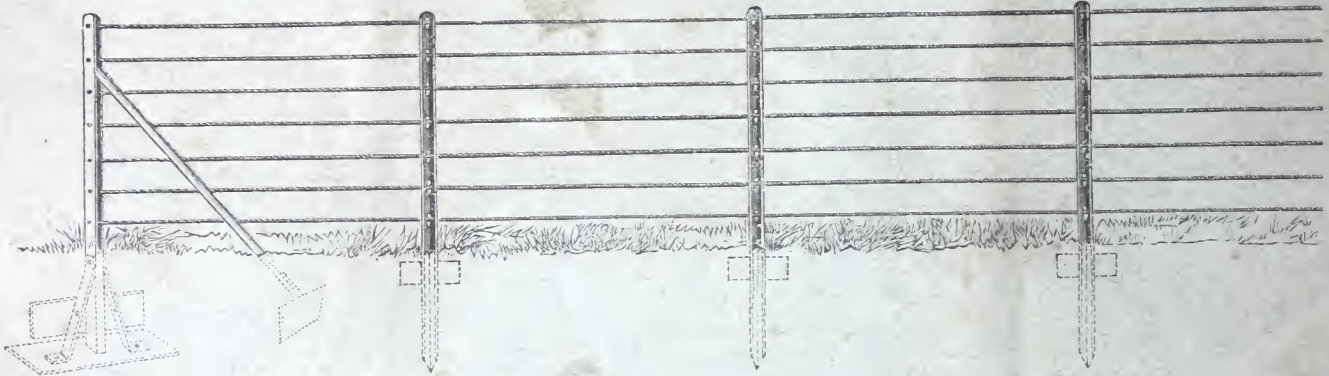
Complete Illustrated Catalogue will be forwarded to any address free on application. Subjoined are a few illustrations.

MAIN'S PATENT CONTINUOUS BAR FENCING. NEW "BREAK-JOINT" CONSTRUCTION.

STANDARDS SECURED BY MAIN'S PATENT STAPLE.

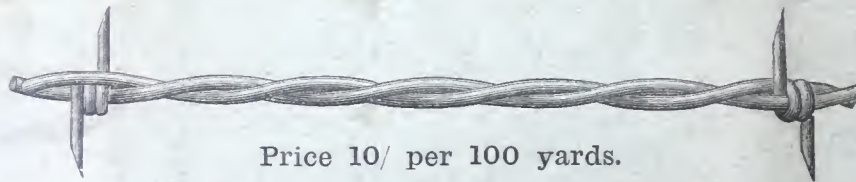


WIRE FENCE WITH ANGLE-IRON UPRIGHTS.



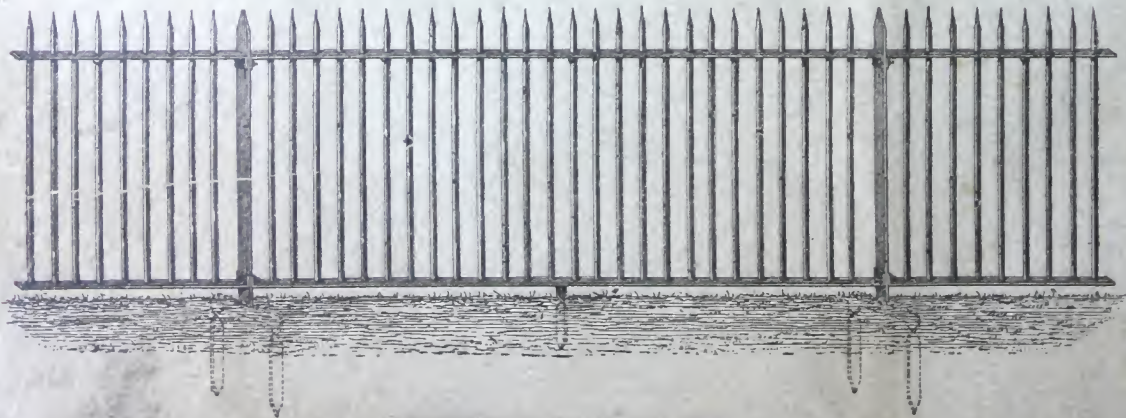
GALVANIZED STEEL BARB WIRE.

Supplied with A. & J. M. & CO.'S STEEL or IRON "TONGUED" STANDARDS.



Price 10/ per 100 yards.

PLAIN WROUGHT IRON RAILING, WITH SOLID OR TUBULAR VERTICAL BARS.



A. & J. MAIN & CO.,
GLASGOW, LONDON, DUBLIN, and EDINBURGH.

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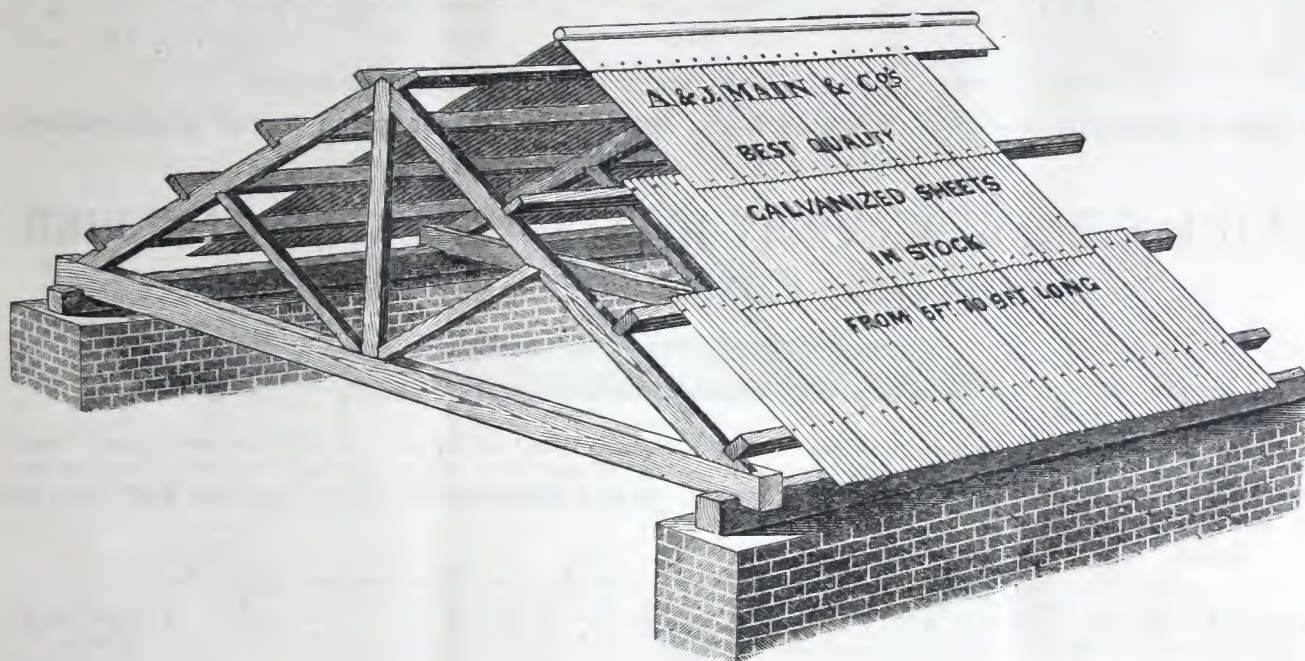


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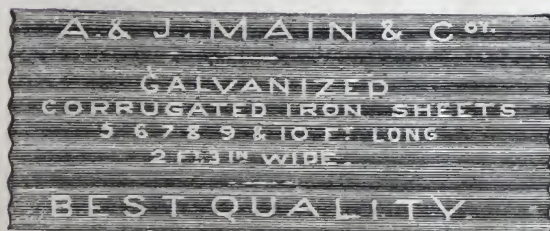
A. & J. MAIN & CO.'S SUPPLEMENTAL PRICE LIST

OF

**GALVANIZED CORRUGATED IRON SHEETS AND ROOFING MATERIALS,
GALVANIZED IRON WATER TANKS,
STABLE AND HARNESS-ROOM FITTINGS, &c.**



GALVANIZED CORRUGATED ROOFING SHEETS, A SUBSTITUTE FOR SLATES, TILES, THATCH, &c.



Besides the adaptability of Galvanized Sheets with *Iron Framing* to the many structures illustrated and described in the following pages, they are, in connection with *WOOD FRAMING*, suitable for covering every description of Out-office or building connected with agricultural and other requirements. Galvanized Sheets are rapidly superseding the use of Slates, Tiles, Thatch, &c.; and amongst their many recommendations and advantages the following may be noted:—

SIMPLE TO FIX.—As A. & J. MAIN & Co. always use Bolts and Nuts with their Sheeting in preference to the cheaper arrangement of Rivets, the fixing upon any building is accomplished by any handy workman with the aid of a hammer, punch, and spanner without skilled help. If

Rivets are used more skill in fixing is required.

SUPPORTS AND FRAMING.—A strong Roof can be formed with *lighter* timber and *less* framing than is necessary for other covering materials. Rafters in an ordinary Sheet Iron Roof may be placed at about 6 to 10 feet apart, and Purlin Bars at joinings of Sheets, or on an average from 6 feet to 7 feet apart.

DURABILITY.—Superiority on this point is undoubted and unquestioned, always providing that, as with other materials, a sound quality of Iron and proper Galvanizing are secured. Unfortunately an inferior quality of Sheets is sometimes used for Roofing purposes; and thus in some instances Iron Roofing may have got into disrepute. A. & J. MAIN & Co. use only the **BEST QUALITY OF SHEETS**; and the Galvanizing is carefully examined to make sure that each Sheet is perfect. Such Sheets form a covering which, under ordinary conditions, requires no outlay or attention for many years.

COMPARATIVE COST.—A saving in first cost, in time fixing, in framing, and in expense of maintenance, combined with durability, offer together an economy so considerable, that as Galvanized Sheets become more widely known their adoption is certain to become universal.

FOR PRICE LIST SEE NEXT PAGE.

(Complete Catalogue of Iron Shedding and Structures on application.)

GALVANIZED CORRUGATED SHEETS, BEST QUALITY.

PRICES.—The Sheets are supplied from 5 ft. to 8 ft. long by 30 in. wide, *before* Corrugation, at a uniform price per superficial foot. After Corrugation, and allowing for overlap, each Sheet covers a width of 2 ft. when fixed.

| LENGTH OF SHEET. | | | | | Per Superficial Foot. | Sheets over 8 ft. long, or under 5 ft., charged extra. | Plain Galvanized Iron or Zinc Ridging, 8d. per lineal foot |
|------------------|-------|-------|-------|-----------|-----------------------------|--|--|
| Gauge. | 5 ft. | 6 ft. | 7 ft. | 8 ft. | | | Galvanized Wood Screws, 2½ in. × ⅝ in. .. 6/ per gross |
| 24 | 2/4 | 2/9 | 3/3 | 3/9 each. | 2¾d. | | „ Bolts and Nuts, ¾ „ × ¼ „ .. 4/6 „ |
| 22 | 2/6 | 3/ | 3/6 | 4/ „ | 3d. | | „ Rivets, .. ¾ „ × ¼ „ .. 3/6 „ |
| 20 | 3/ | 3/6 | 4/3 | 4/9 „ | 3½d. | Curved Sheets, 20/ | „ Square Washers, Corrugated, .. 8/ „ |
| 18 | 4/ | 4/9 | 5/6 | 6/3 „ | 4½d. | per ton extra. | „ Round „ „ .. 1/3 „ |
| | | | | | | | „ Spiked Nails, 4/6 „ |

Sheets 5 ft., 6 ft., 7 ft., 8 ft., and 9 ft. (No. 22 Gauge) in Stock ready for dispatch.

✂ **Cost of Materials** required, including Bolts, Screws, &c., estimated on receipt of dimensions.

EXTRA STRONG WROUGHT-IRON SUNK END HALF-ROUND GUTTERS. PAINTED AND GALVANIZED.



These Gutters are made of exactly the same Patterns as ordinary Cast-Iron Gutters, and with the usual fittings. Being made of Wrought Iron, they are unbreakable, and will bear the pressure of a ladder; are light to handle, but stronger, more durable, and cheaper than Cast-Iron or Zinc Gutters. **When Galvanized**, they conduct Rain Water clean and pure, and free from all contamination of rust or taint of paint.

| PRICES:—Size, | 3½ in. | | 4 in. | | 4½ in. | | 5 in. | | 6 in. | |
|---------------------------|-----------|-------------|-----------|-------------|------------|-------------|-----------|-------------|-----------|-------------|
| | Painted. | Galvanized. | Painted. | Galvanized. | Painted. | Galvanized. | Painted. | Galvanized. | Painted. | Galvanized. |
| Gutters in 6 ft. lengths, | s. d. 0 8 | s. d. 1 0 | s. d. 0 9 | s. d. 1 2 | s. d. 0 11 | s. d. 1 4 | s. d. 1 1 | s. d. 1 6 | s. d. 1 4 | s. d. 2 0 |
| Elbows or Angles—Nozzles, | 1 2 | 1 4 | 1 4 | 1 6 | 1 8 | 1 10 | 1 10 | 2 0 | 2 3 | 2 6 each. |



| Size, | 2½ in. | | 3 in. | | 4 in. diam. | | Black. | Galvanized. |
|---------------------------------|--------|-------|-------|-------|-------------|-------|--------|----------------|
| | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. | | |
| Wrought-Iron Pipes, Galvanized, | 0 7 | 0 8 | 0 8 | 0 10 | per ft. | | 5 0 | 7 6 per doz. |
| „ Heads, „ | 3 3 | 3 6 | 4 4 | each. | | | 5 0 | 7 6 per gross. |
| „ Shoes, „ | 1 9 | 2 0 | 2 6 | „ | | | | |

WROUGHT-IRON OPEN WATER TANKS AND TROUGHS.



| Gallons. | Length. ft. in. | Width. ft. in. | Depth. ft. in. | Galvanized. | Painted. |
|----------|--------------------|-------------------|-------------------|-------------|------------|
| 50 | 2 5 | 1 10 | 1 10 | s. d. 30 6 | s. d. 28 0 |
| 80 | 2 10 | 2 3 | 2 0 | 41 0 | 37 0 |
| 100 | 3 2 | 2 3 | 2 3 | 46 0 | 41 6 |
| 125 | 3 4 | 2 7 | 2 4 | 54 6 | 48 6 |
| 150 | 3 6 | 2 7 | 2 8 | 73 0 | 66 0 |
| 200 | 3 10 | 2 11 | 2 11 | 78 0 | 70 0 |
| 250 | 4 2 | 3 3 | 3 0 | 100 0 | 90 0 |
| 300 | 4 6 | 3 7 | 3 0 | 116 0 | 105 0 |

Cast-Iron Rain-Water Pipes and Gutters,
Patent-Welded Wrought-Iron Tubes and Fittings,
Cast-Iron Gas and Water Pipes and Connections, } *Prices on Application.*

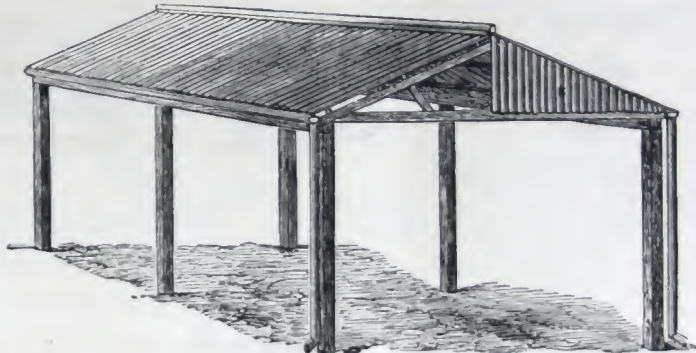
GALVANIZED IRON ROOF, RIDGE-SHAPED, ON WOOD FRAMING.

No. 319 illustrates the application of Galvanized Sheets to an ordinary Ridge-shaped Roof with Wood Framing. The Principals or Rafters are usually placed about 6 ft. apart, with a Purlin at each joining of the sheets, or on an average about 6 ft. apart.

No. 319.—SPECIFICATION AND PRICES.

Best Galvanized Corrugated Sheets No. 22 B.W.G. for Roof, Ridge-Cover, Guttering and Down-Piping, Bolts and Screws, &c. *The Sheets for cleading ends down to level of Eaves, marked B on illustration, are not included, but are quoted for separately.*


When Timber is supplied the Uprights are 12 ft. high, and placed at 10 ft. to 12 ft. apart, with Eaves Beam, Tie-Bars, Rafters, and Purlin Bars.





No. 319.


| Roof 30 ft. long by 12 ft. wide, | | | | Without Timber. | With Timber. | Roof 50 ft. long by 18 ft. wide, | | | | Without Timber. | With Timber. | | | | | | | | | | | | |
|----------------------------------|----|---|----|-----------------|--------------|----------------------------------|-----|---|----|-----------------|--------------|-----|----|---|-----|---|---|----|----|---|----|----|---|
| | | | | £10 | 0 | 0 | £21 | 0 | 0 | | | £22 | 15 | 0 | £42 | 0 | 0 | | | | | | |
| " | 40 | " | 12 | " | - | 12 | 15 | 0 | 26 | 10 | 0 | " | 60 | " | 18 | " | - | 27 | 10 | 0 | 50 | 0 | 0 |
| " | 30 | " | 15 | " | - | 12 | 5 | 0 | 25 | 0 | 0 | " | 40 | " | 20 | " | - | 20 | 0 | 0 | 37 | 0 | 0 |
| " | 40 | " | 15 | " | - | 16 | 0 | 0 | 30 | 10 | 0 | " | 50 | " | 20 | " | - | 24 | 0 | 0 | 44 | 10 | 0 |
| " | 50 | " | 15 | " | - | 19 | 10 | 0 | 36 | 10 | 0 | " | 60 | " | 20 | " | - | 28 | 15 | 0 | 52 | 10 | 0 |
| " | 60 | " | 15 | " | - | 23 | 10 | 0 | 43 | 10 | 0 | " | 70 | " | 20 | " | - | 33 | 10 | 0 | 61 | 10 | 0 |
| " | 30 | " | 18 | " | - | 14 | 0 | 0 | 26 | 0 | 0 | " | 80 | " | 20 | " | - | 38 | 10 | 0 | 70 | 0 | 0 |
| " | 40 | " | 18 | " | - | 18 | 15 | 0 | 34 | 10 | 0 | " | 90 | " | 20 | " | - | 43 | 10 | 0 | 78 | 10 | 0 |


IMPROVED HARNESS-ROOM FITTINGS—Delivered in Glasgow or London.


No. 165.—Bridle Hook.  Japanned. Galvanized.
3 in., 3d. each. 4d. each.
3½ in., 4d. „ 5d. „
4 „ 6d. „ 7d. „

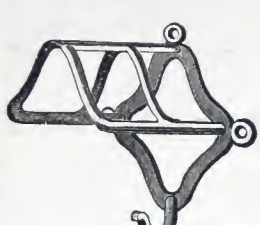
No. 170.—Wrought-Iron Crupper or Rein Holder.  Japanned, 7d. each.
Galvanized, 8d. „


No. 181.—Wrought-Iron Pad Holder.  Japanned, 1s. 7d. each.
Galvanized, 1s. 9d. „

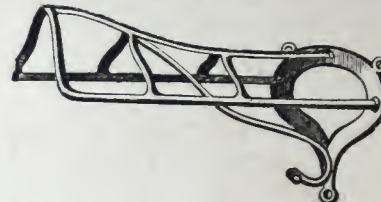
No. 172.—Wrought-Iron Bridle Holder, with Girth Hook.  Japanned, 1s. 9d. each.
Galvanized, 2s. „

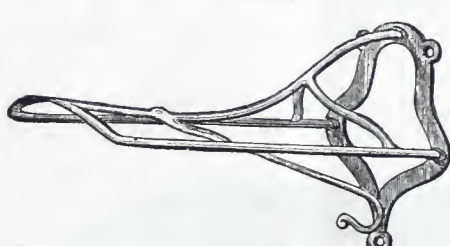
No. 169.—Hame Holder.  Japanned, 3s. 4d. each.
Galvanized, 3s. 8d. „


No. 174.—Wrought-Iron Collar Holder.  Japanned, 3s. 4d. each.
Galvanized, 3s. 8d. „


No. 180.—Wrought-Iron Pad Bracket.  Japanned, 3s. 3d. each.
Galvanized, 3s. 8d. „


No. 173.—Driving Bridle Bracket.  Japanned, 3s. 6d. each.
Galvanized, 4s. „


No. 178.—Ladies' Wrought-Iron Riding Saddle Bracket.  Japanned, 5s. 3d. each.
Galvanized, 5s. 10d. „

No. 176.—Wrought-Iron Ventilating Riding Saddle Bracket.  Japanned, 4s. 4d. each.
Galvanized, 4s. 10d. „

Nos. 187 and 188.—Harness Brackets.  No. 187, 6 in.,—
Japanned, 6d. each.
Galvanized, 7d. „


No. 179.—Single Bridle Bracket.  Japanned, 3s. each.
Galvanized, 3s. 4d. each.

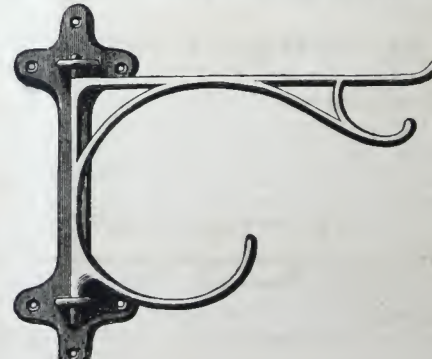
Nos. 197 & 198.—Whip Holders.  No. 197, Single,
Japanned, 1/3 each.
Galvanized, 1/6 „


Nos. 185 and 186.—Crupper or Stirrup Hook.  No. 185, Single,
Japanned, -/9 each.
Galvanized, 1/- „


No. 198, Double, Japanned, 1/9 each. Galvanized, 2/- „

No. 186, Double, Japanned, 1/- each. Galvanized, 1/4 „

No. 140.—HARNESS BRACKET, WITH HOOK.  Japanned, 4s. 4d. each.
Galvanized, 4s. 10d. „

No. 135.—SWING HARNESS BRACKET, with HOOK.  16 in.,—Japanned, 3s. each.
Galvanized, 4s. „

No. 190.—SPONGE BASKET.  Japanned, - 7s.
Galvanized, - 9s.

Harness Cleaning Hook, with Rack.—No. 44.  Japanned, 8s. each. | Galvanized, 10s. each.

⚡ All above Fittings when "Japanned" are Black only, but may be had Crimson or Blue at same Prices as Galvanized.

STABLE VENTILATORS.

| | | | | | | |
|---------------------------|---|---|---------------|-----------------------------------|---|---------------|
| Square or Round, 6 inches | - | - | 1s. 3d. each. | Sliding Ventilator, 9 in. × 8 in. | - | 2s. 0d. each. |
| Do. 9 | - | - | 2s. 0d. „ | Do. 12 in. × 9 in. | - | 3s. 0d. „ |
| Do. 12 | - | - | 3s. 0d. „ | Do. 18 in. × 12 in. | - | 5s. 6d. „ |

IMPROVED CARRIAGE JACKS, BRUSH BOXES, STOPPING BOXES, and all other Harness-room Requisites.

Corn Manger.



No. 11.

Delivered in Glasgow; in London.

Delivered in Glasgow; in London.

| | | |
|-----------------|-----|-----|
| 33 in. wide, .. | 5/6 | 7/6 |
| 36 „ „ .. | 7/- | 9/- |

If Galvanized, 4/6 extra.

Flat Hay Rack.



Delivered in Glasgow; in London.

| | | |
|-----------------|-----|------|
| 30 in. wide, .. | 4/6 | 6/- |
| 36 " " .. | 6/- | 8/- |
| 42 " " .. | 8/- | 10/6 |

If Galvanized, 30 in., 3/6;
36 in., 4/-; 42 in., 5/- extra.

Corner Hay Rack. Improved Corner Manger.



Delivered in Glasgow : in London.

Delivered in Glasgow; in London.
33 in. wide, .. 6/- 8/-
If Galvanized, 4/- extra.



No. 24.

Delivered in Glasgow; in London.

Delivered in Glasgow; in London.

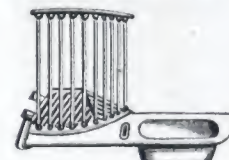
| | | |
|-----------------|-----|------|
| 33 in. wide, .. | 8/- | 10/6 |
| 37 " " .. | 9/- | 11/6 |

If Galvanized, 4/6 extra.

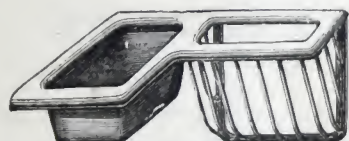
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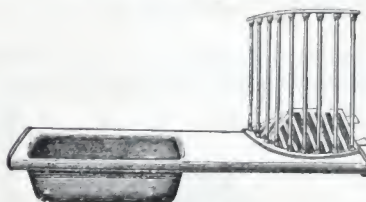
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No. 20.



No. 8.



No. 14.



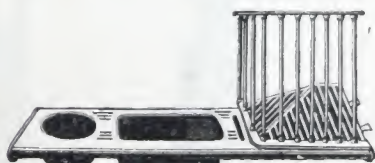
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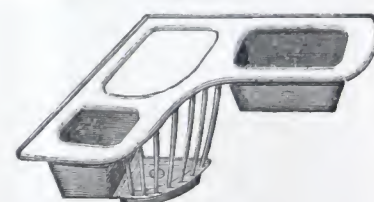
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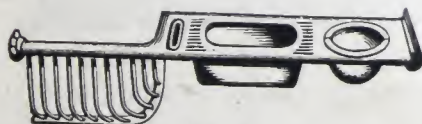
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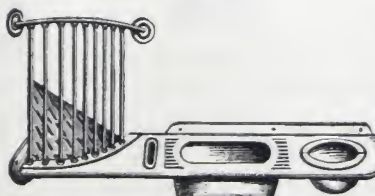
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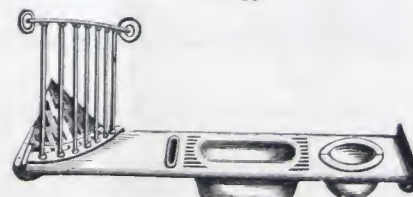
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No. 24.



No. 25.



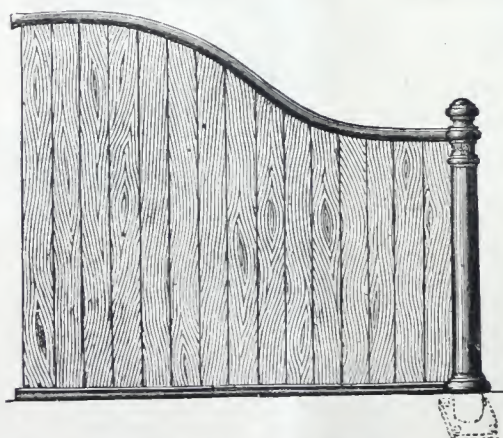
No. 26.

| No. 23. | | | No. 26. | | |
|---|---|-----------------|---------|--|------------------|
| No. | | Glasgow London. | No. | | Glasgow, London. |
| 5A, | Manger, Rack and Gruel Pot, for Corner, | 32/6 37/6 | 20, | Manger and Rack, Right and Left, | 27/- 32/- |
| 8, | Manger and Rack for Corner, - - | 32/6 37/6 | 22, | Manger, Rack and Gruel Pot - - | 35/- 40/- |
| 9, | Manger, Rack and Gruel Pot, - - | 31/- 36/- | 23, | " " - - | 33/- 38/- |
| 12, | " " for Loose-Box, | 32/6 37/6 | 24, | " " with Tumbling Pot, | 50/- 56/6 |
| 13, | Manger and Rack - - - - | 32/6 37/6 | 25, | " " " for Loose Box, | 50/- 56/6 |
| 14, | " " " " - - - - | 33/6 38/6 | 26, | " " " " - - - - | 50/- 56/6 |
| 16, | Manger, Rack and Gruel Pot, - - | 34/- 40/- | | Iron Fastenings for ends of Top Plates, extra, per set, | 2/- |
| | Fitting Manger Sets with Brass Bushes, extra, each, | 2/6 | | Fitting Gruel Pots with Brass Plug or Cock, " each, | 4/- |
| | " " " Friction Rollers, " " " | 4/6 | | Galvanizing complete Set, 22/6; Top Plate and Rack, 12/6 | |
| ENAMELLING Mangers and Gruel Pots. <i>Prices quoted on application.</i> | | | | | |

London Prices for Stable Fittings, but not Harness Room Fittings, include delivery in Dublin and the principal seaports in England and Ireland; also in Edinburgh, Perth, Ayr, Dumfries, and other chief stations in Scotland.

Prices will be forwarded on application for the complete fitting up of Stables with Iron Work, Wood Travising, Flooring, Plain and Ornamental Tiles, Guttering, &c. When asking Prices, it is necessary that a rough plan and dimensions of the Stable should be given, and an estimate of the whole will then be forwarded. A few varieties are here illustrated and Priced; other Designs and Prices will be sent on application.

The ORNAMENTAL DIVISION has, in addition, an OPEN IRON RAILING, in styles to correspond with Loose Boxes. A Stable thus arranged has not only a handsome appearance, but is the most healthy, being more airy and better ventilated.



Plain Division, No. 2 Heel-Post, with Head.



No. 9 Heel-Post.



No. 3 Open Iron Work, No. 2 Heel-Post, with Head.

PRICES.

| | | | | | | | | | |
|--|----|----|----|----|----|----|----|-------------|----------------------|
| No. 2 Post with Head, Ramp, and Sill, per Set, | .. | .. | .. | .. | .. | .. | .. | In Glasgow. | In London or Dublin. |
| " 3 " " " " " " | .. | .. | .. | .. | .. | .. | .. | 30/ | 36/ |
| " 9 " " " " " " | .. | .. | .. | .. | .. | .. | .. | 30/ | 36/ |
| " 9 " " " " " " | .. | .. | .. | .. | .. | .. | .. | 33/6 | 40/ |
| 1½ in. FEATHERED and GROOVED Wood Traversing for above, each extra | .. | .. | .. | .. | .. | .. | .. | 18/6 | 22/6 |
| HALF POSTS, RAMPS, and SILLS for WALLS, Two-thirds of above. | | | | | | | | | |

| | In Glasgow. | In London or Dublin. |
|---|-------------|----------------------|
| No. 2 or 3 Post, fitted with No. 2 Open Iron Work, 30 in. high, per Set | 60/ | 70/ |
| „ 2 or 3 „ 3 „ „ „ „ 30 „ „ „ | 57/6 | 67/6 |
| „ 9 „ „ with „Horse or Pine Head fitted to any of above, 3/6 extra to above Prices. | | |
| 1½ in. FEATHERED and GROOVED Wood Travising for above, each extra | 16/6 | 20/ |
| Half Posts for head of Stalls, to correspond with Heel-Post | 21/ | 25/ |
| Brass Pulleys and Iron Weights to run inside Posts, each extra | 13/6 | |
| Brass Rings fitted to Posts, each extra | 3/6 | |

LOOSE-BOX DIVISIONS.



Loose-Box Divisions with
Plain and Ornamental Open
Work, with Doors to match ;
fitted with flush Bolts, and
with and without Wood-work.

Estimate on receipt of
dimensions required.

Complete Illustrated Catalogue of STABLE FITTINGS forwarded on application.



No. 8 Post, Ball Head, No. 3 Open Iron Work.

No. 7 Post, 7½ ft. high, each, - - - - - 30/-

„ 8 „ „ „ - - - - - 30/-

Fittings to carry Doors, when required, extra.

Open Work 30 inches high, and bottom Rail for Purchasers' boarding.

No. 2, 7/6; No. 3, 7/6 per foot run.

Doors fitted with Flush Latches, to take Purchasers' wood-work. 3 ft. 6 in. wide, 55/-; 4 ft. wide, 65/- each.

STABLE GUTTERING.

This Guttering is made with Loose Cover to lift off for cleaning.

Price per foot delivered in Glasgow, 1s. 9d. ; in London, 2s. 3d.

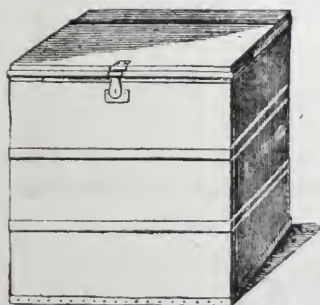


Angles for Guttering, right and left, each, delivered in Glasgow, 3s.; in London, 4s.

T Pieces, delivered in Glasgow, 4s. 9d.; in London, 5s. 9d. Cross Pieces, delivered in Glasgow, 5s. 9d.; in London, 6s. 9d.

Drain Gratings and Frames, 12 in., 2s. 9d. each. Horse and Mare Pots, 9 in., 2s. 9d.; 10 in., 3s. 6d.; 12 in., 4s. 9d. each.

Outlets 9d. each extra.



GALVANIZED IRON CORN BINS.

| | | | | | |
|------|------|------|------|------|-------------|
| 4 | 6 | 8 | 10 | 12 | 16 Bushels. |
| 25/- | 35/- | 40/- | 47/6 | 55/- | 70/- |

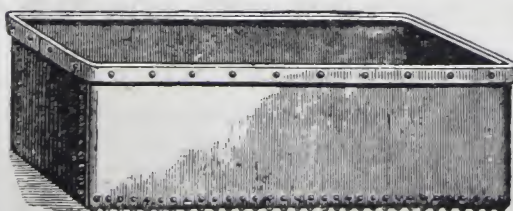
Internal Division 5s. extra.

CIRCULAR PATTERN DITTO.

4 Bushels, 23/6 ; 6 ditto, 30/- ; 8 ditto, 36/-.

STRONG GALVANIZED WROUGHT-IRON CATTLE TROUGHS.

With safe edge. 18 in. wide by 15 in. deep.



4 ft. long, - - - 33/6

5 " - - - 40/-

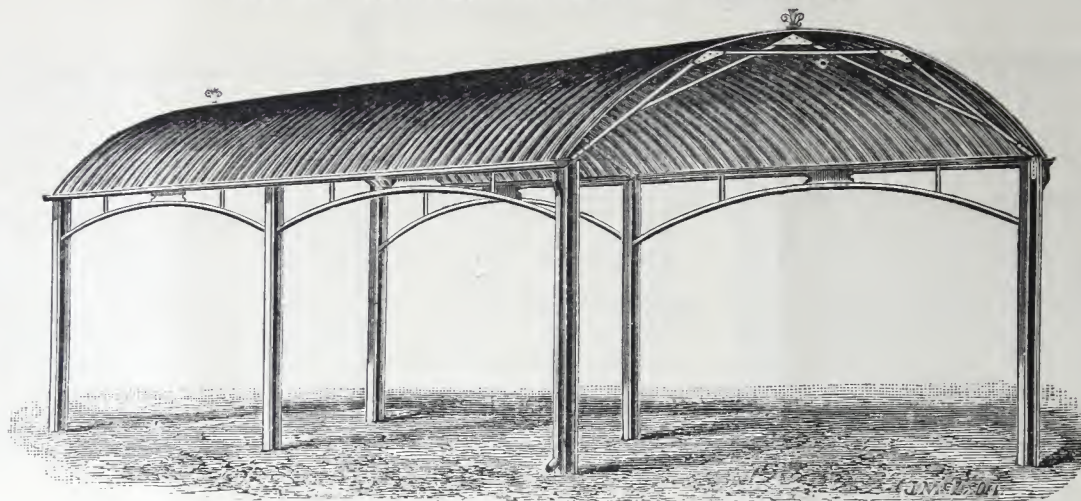
6 ft. long, - - - 45/-

7 " - - - 55/-

Plug and Chain, if required, 5/- extra.

NEW GALVANIZED HAY OR CORN SHED.

CONSTRUCTED WITHOUT TIE-RODS.



No. 415.

The special feature in this New Roof is that it is constructed *without* the ordinary Tie-bars which stretch across a Shed, and which, especially in Sheds used for storing Hay and Grain, &c., are frequently complained of. The effect of Tie-bars in a Shed, so far as its usefulness is concerned, is to diminish its storing capacity, as space for the Ties must be left clear.

By the NEW CONSTRUCTION OF ROOF now introduced by A. & J. MAIN & Co., *all Tie-bars are dispensed with* and the strength and stability of the structure are secured by a system of Iron Lattices, Spanning the Roof. In this way clear head-room to within a few inches of the Roof sheet is obtained for storage, and the storing capacity of the shed is thus greatly increased.

In other respects the Roof and Framing are constructed in the same manner as hitherto. The Eaves beams are of Iron, upon a new and improved construction, securing great stiffness and strength; but prices are also quoted for Wood Eaves Beams.

For Sheds from 20 feet to about 30 feet wide this new arrangement is well adapted, and Prices are here submitted for a few sizes 20 feet wide.

SPECIFICATION AND PRICES.

No. 415.—The Columns are of Malleable Iron, and are placed at 15 ft. apart, and stand 12 ft., 14 ft., 16 ft., and 18 ft. high above ground. Arched Iron Beams are supplied for the eaves; but prices are also quoted for Wood Eaves Beams. A Crown Bar of Angle-iron runs from end to end of roof, to which, and to Eaves, the sheets are secured by A. & J. MAIN & Co.'s New Wrought-iron Clips, and Lattice Iron Bracings span the Roof every 15 feet. The ends are clad down to level of Eaves, for which Angle-iron Principals and Framing are provided, with Guttering and Down-Piping for each side.

| | | | 12 ft. high. | | 14 ft. high. | | 16 ft. high. | | 18 ft. high. | |
|----------------------------------|--|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. | With Wood Eaves Beams. | With Iron Eaves Beams. |
| Shed 30 ft. long by 15 ft. wide, | | | £35 0 0 | £39 0 0 | £36 0 0 | £40 0 0 | £37 10 0 | £41 10 0 | £43 0 0 | £47 0 0 |
| „ 45 „ 15 „ | | | 43 10 0 | 49 10 0 | 44 10 0 | 50 10 0 | 46 0 0 | 52 0 0 | 54 0 0 | 60 0 0 |
| „ 60 „ 15 „ | | | 55 0 0 | 62 10 0 | 56 10 0 | 64 0 0 | 59 0 0 | 66 10 0 | 65 10 0 | 73 0 0 |
| „ 45 „ 20 „ | | | 50 10 0 | 56 10 0 | 53 0 0 | 59 0 0 | 55 0 0 | 61 0 0 | 61 10 0 | 67 10 0 |
| „ 60 „ 20 „ | | | 62 10 0 | 70 0 0 | 64 10 0 | 72 0 0 | 67 10 0 | 75 0 0 | 75 10 0 | 83 0 0 |
| „ 75 „ 20 „ | | | 75 0 0 | 85 0 0 | 78 0 0 | 88 0 0 | 82 0 0 | 92 0 0 | 90 0 0 | 100 0 0 |
| „ 90 „ 20 „ | | | 88 10 0 | 101 0 0 | 91 10 0 | 104 0 0 | 95 0 0 | 107 10 0 | 107 10 0 | 120 0 0 |

Delivered free to principal Railway Stations, or to Seaports in Ireland.

A. & J. MAIN & CO.,
 IRON FENCE, GATE, BRIDGE, AND ROOFING MANUFACTURERS,
 WIRE MERCHANTS AND CONTRACTORS,
 108, QUEEN VICTORIA STREET, LONDON, E.C.
 CORN EXCHANGE BUILDINGS, EDINBURGH; 11, LEINSTER STREET, DUBLIN.

Head Offices and Works—Clydesdale Iron Works, Possilpark, Glasgow.
 (Complete Catalogue of Iron Shedding and Structures on application.)